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INSTITUTION Nova Univ., Fort Lauderdale, FL. Center for Computer

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ABSTRACT

Intended for classroom use only, these unpublished notes contain computer lessons on descriptive statistics with files previously created in WordPerfect 4.2 and Lotus 1-2-3 Version 1.A for the IBM PC+. The statistical measures covered include Student's t-test with two independent samples; Student's t-test with a paired sample; Chi-square analysis; Pearson's product moment coefficient of correlation; One-way analysis of variance, with Tukey mean comparison; Two-way analysis of variance; Using PLOT and HISTOGRAM to display data; Simple linear regression; and Using SELECT IF, COMPUTE, and IF to calculate descriptive statistics. (ALF)



Mana Mucheratta

Center for Computer and Information Sciences

EXAMPLES OF DATA ANALYSIS
WITH SPSS/PC+ STUDENTWARE

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THOMAS W. MACFARLAND, Ed.D.

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EXAMPLES OF DATA ANALYSIS WITH SPSS/PC+ STUDENTWARE

Thomas W. MacFarland, Ed.D.

Unpublished notes of the author December, 1989



Test:

Descriptive Statistics, with files previously created in WordPerfect 4.2 and Lotus 1-2-3

Version 1.A

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

:*

Based on data provided in Table 1, determine the

mean for subject Tom.

Table 1 Summary Data

Test #	Tom	Bob	Roy	Sue	Bea
1	089	091	081	081	083
2	091	081	071	089	100
3	091	065	045	081	092
4	082	071	062	079	081
5	072	067	091	085	094

Answer:

Answer(s) can be found in sample.lis. Briefly,

Mean for Tom = 85.00

Be sure to rename spss.lis to sample.lis.

DATA LIST /

Test_# 01 Tom 03 - 05Bob 07-09 Roy 11-13 Sue 15-17 Bea 19-21.

VARIABLE LABELS

Test_# "Test Number (of five)"



Notes for SPSS Studentware

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Tom "Thomas R. O'Callish"
Bob "Robert E. Lee, IV"
Roy "Leroy G. Anglesh"
Sue "Susan V. Douglas"
Bea "Beatrice H. Malcolm".

BEGIN DATA.

1 089 091 081 081 083 2 091 081 071 089 100 3 091 065 045 081 092 4 082 071 062 079 081 5 072 067 091 085 094 END DATA.

SPSS/PC+ Studentware

11/27/89

include 'sample.dat'.

Test: Des

Descriptive Statistics, with files previously created in WordPerfect 4.2 and Lotus 1-2-3

Version 1.A

Author:

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* * * * * * * * * * * * * * * * Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

Table 1
Summary Data

| Test # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | 085 | 094 |
| | | | | | |

Answer:

Answer(s) can be found in sample.lis. Briefly



4

DATA LIST /
Test_# 01
Tom 03-05
Bob 07-09
Roy 11-13
Sue 15-17
Bea 19-21.

VARIABLE LABELS

Test_# "Test Number (of five)"
Tom "Thomas R. O'Callish"
Bob "Robert E. Lee, IV"
Roy "Leroy G. Anglesh"
Sue "Susan V. Douglas"
Bea "Beatrice H. Malcolm".

BEGIN DATA.

END DATA.

5 cases are written to the compressed active file.

This procedure was completed at 1:30:09
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.

**** Memory allows a total of 7119 Values, accumulated across all Variables. There also may be up to 890 Value Labels for each Variable.

Page 2 SPSS/PC+ Studentware 11/27/89

TOM Thomas R. O'Callish

| Value Label | Value | Frequency | Percent | Valid
Percent | Cum
Percent |
|-------------|-------|-----------|---------|------------------|----------------|
| | 72 | 1 | 20.0 | 20.0 | 20.0 |
| | 82 | 1 | 20.0 | 20.0 | 40.0 |
| | 89 | 1 | 20.0 | 20.0 | 60.0 |
| | 91 | 2 | 40.0 | 40.0 | 100.0 |
| | TOTAL | 5 | 100.0 | 100.0 | |

Mean 85.000

Valid Cases 5 Missing Cases 0

This procedure was completed at 1:31:44



11/27/89 SPSS/PC+ Studentware Page finish

[Next command's output on page 1 include 'sample.dat'

Test:

Descriptive Statistics, with files previously created in WordPerfect 4.2 and Lotus 1-2-3

Version 1.A

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

Table 1 Summary Data

| Test # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | 085 | 094 |

Answer:

Answer(s) can be found in sample.lis. Briefly,

Mean for Tom = 85.00

Be sure to rename spss.lis to sample.lis.

[DATA LIST /

Test_# 01 Tom 03 - 0507-09 Bob 11-13 Roy

Notes for SPSS Studentware

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```
15-17
      Sue
                  19-21.
      Bea
VARIABLE LABELS
                 "Test Number (of five)"
"Thomas R. O'Callish"
      Test_#
      Tom
                  "Robert E. Lee, IV"
      Bob
                  "Leroy G. Anglesh"
"Susan V. Douglas"
      Roy
      Sue
                  "Beatrice H. Malcolm".
      Bea
[BEGIN DATA.
[1 089 091 081 081 083
2 091 081 071 089 100
3 091 065 045 081 092
j4 082 071 062 079 081
[5 072 067 091 085 094
[END DATA.
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.
[Next command's output on page
finish
```



Test: Descriptive Statistics

Author: Thomas W. MacFarland, Ed.D.

Source: McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 48

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine the

following for each sample:

1. Median

2. Mean

3. Standard Deviation

Table 1
Summary Data

| Sample #1 | Sample #2 | Sample # |
|-----------|-----------|----------|
| | | |
| 0039 | 0100 | 0100 |
| 0042 | 0004 | 0004 |
| 0040 | 0007 | 0007 |
| 0037 | 0096 | 0030 |
| 0041 | 0300 | 0080 |
| | 0003 | 0030 |
| | 0001 | 0042 |
| | 0010 | 0002 |
| | 0002 | 0002 |

Note:

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Use the MISSING VALUE command so that all samples can be retained in the same file.

Answer:

Answer(s) can be found in mean-sd.lis.

Be sure to rename spss.lis to mean-sd.lis.

DATA LIST /

!

Sample_1 01-04 Sample_2 06-09



```
Sample_3 11-14.
VARIABLE LABELS
     Sample_1 "Sample #1"
Sample_2 "Sample #2"
     Sample 3 "Sample #3".
MISSING VALUE Sample_1 (0999) Sample_2 (0999) Sample_3 (0999).
BEGIN DATA.
0039 0100 0100
0042 0004 0004
0040 0007 0007
0037 0096 0030
0041 0080 0080
0999 0003 0030
0999 0001 0042
0999 0010 0002
0999 0002 0999
END DATA.
                                                                                11/26/89
                              SPSS/PC+ Studentware
include 'mean-sd.dat'.
   Test:
               Descriptive Statistics
   Author:
               Thomas W. MacFarland, Ed.D.
               McClave, James T., and Frank H. Dietrich, II.
   Source:
                     STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.
                     ISBN 0-02-379260-4
                                           Page 48
   Software:
               SPSS/PC+ Studentware
                Based on data provided in Table 1, determine the
   Scenario:
                following for each sample:
                1.
                    Median
                    Mean
                2.
                3. Standard Deviation
                                      Table 1
                                    Summary Data
                                                               Sample #3
                Sample #1
                                      Sample #2
```



```
0100
                                     0100
                0039
                                                            0004
                                     0004
                0042
                                     0007
                                                            0007
                0040
                                                            0030
                                     0096
                0037
                                                            0080
                0041
                                     0080
                                                            0030
                                     0003
                                                            0042
                                     0001
*
                                                            0002
                                     0010
                                     0002
              Use the MISSING VALUE command so that all samples
*
  Note:
              can be retained in the same file.
              Answer(s) can be found in mean-sd.lis.
  Answer:
              Be sure to rename spss.lis to mean-sd.lis.
DATA LIST /
     Sample 1 01-04
Sample 2 06-09
     Sample_3 11-14.
VARIABLE LABELS
     Sample_1 "Sample #1"
     Sample 2 "Sample #2"
     Sample 3 "Sample #3".
MISSING VALUE Sample 1 (0999) Sample 2 (0999) Sample 3 (0999).
BEGIN DATA.
END DATA.
      9 cases are written to the compressed active file.
This procedure was completed at 14:17:57
FREQUENCIES VARIABLES = Sample 1 Sample 2 Sample 3 / STATISTICS ALL.
**** Memory allows a total of 4652 Values, accumulated across all Variables.
                                  581 Value Labels for each Variable.
      There also may be up to
                                                                          11/26/89
Page
                            SPSS/PC+ Studentware
SAMPLE 1 Sample #1
                                                          Valid
                                                                     Cum
                             Value Frequency Percent Percent
                                                                   Percent
 Value Label
                                                           20.0
                                                                     20.0
                                37
                                                  11.1
```



11.1

11.1

1

1

39

40

20.0

20.0

40.0

60.0

Notes for SPSS Studentware

10

| | | 41
42
999 | 1
1
4 | 11.1
11.1
44.4 | 20.0
20.0
MISSING | | |
|--|---|--|--|--|--|---|----------|
| | | TOTAL | 9 | 100.0 | 100.0 | | |
| Mean
Mode
Kurtosis
S E Skew
Maximum | 39.800
37.000
022
.913
42.000 | Std Err
Std Dev
S E Kurt
Range
Sum | .860
1.924
2.000
5.000
199.000 | | ance
ness | 40.000
3.700
590
37.000 | |
| Valid Case | es 5 | Missing Ca | ases 4 | | | | |
| Page 3 | | SPSS/PC+ | - Studentwa | re | | | 11/26/89 |
| SAMPLE_2 | Sample #2 | | | | | | |
| Value La | abel | Value | Frequency | Percent | Valid
Percent | Cum
Percent | E . |
| | | 1
2
3
4
7
10
80
96
100 | 1
1
1
1
1
1
1 | 11.1
11.1
11.1
11.1
11.1
11.1
11.1 | 11.1
11.1
11.1
11.1
11.1
11.1
11.1 | 11.1
22.2
33.3
44.4
55.6
66.7
77.8
88.9
100.0 | |
| | | TOTAL | 9 | 100.0 | 100.0 | | |
| Page 4 | | SPSS/PC | - Studentwa | re | | | 11/26/89 |
| SAMPLE_2 Mean Mode Kurtosis S E Skew Maximum Valid Case | .717 | S E Kurt
Range
Sum
Missing Ca | 99.000
303.000
ases 0 | Skew
Mini | | 7.000
9 49. 250
.896
1.000 | |
| Page 5 | | SPSS/PC- | + Studentwa | re | | | 11/26/89 |
| SAMPLE_3 | Sample #3 | | | | | | |



Valid

Cum

| Value La | bel | Value | Frequency | Percent | Percent | Percent | : |
|--|--|---|--------------------------------------|--|--------------------------------------|--------------------------------------|----------|
| | | 2
4
7
30
42
80
100
999 | 1
1
2
1
1
1 | 11.1
11.1
22.2
11.1
11.1
11.1 | 12.5
12.5
25.0
12.5
12.5 | 25.0
37.5
62.5
75.0
87.5 | |
| | | TOTAL | 9 | 100.0 | 100.0 | | |
| Mean
Mode
Kurtosis
S E Skew
Maximum
Valid Case | | Std Err
Std Dev
S E Kurt
Range
Sum | 36.164
1.481
98.000
295.000 | Vari
Skew | ance 13 | 30.000
07.839
.913
2.000 | |
| This proce | dure was comp | oleted at 14 | :21:02 | | | | |
| Page 6 finish [Next commainclude 'mage 'ma | and's output
ean-sd.dat'.
Descript | · | | re | | | 11/26/89 |
| * Author | : Thomas W | . MacFarlan | d, Ed.D. | | | | |
| * Source
*
* | STA
Cal | James T.,
ATISTICS, 4t
ifornia: D
BN 0-02-3792 | h edition.
ellen Publi | San Fran
shing Con | cisco. | 88. | |

Software: SPSS/PC+ Studentware

Based on data provided in Table 1, determine the following for each sample: Scenario:

1. Median

2. Mean

3. Standard Deviation

Table 1

Summary Data



*

* *

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*

* *

*

```
Sample #3
                                    Sample #2
               Sample #1
                                                             0100
                 0039
                                      0100
                                                             0004
                 0042
                                      0004
                                                             0007
                 0040
                                      0007
                                                             0030
                 0037
                                      0096
                                                             0080
                                      0080
                 0041
                                                             0030
                                      0003
                                                             0042
                                      0001
                                                             0002
                                      0010
                                      0002
               Use the MISSING VALUE command so that all samples
   Note:
               can be retained in the same file.
               Answer(s) can be found in mean-sd.lis.
   Answer:
               Be sure to rename spss.lis to mean-sd.lis.
[DATA LIST /
     Sample_1 01-04
     Sample_2 06-09
     Sample_3 11-74.
VARIABLE LABELS
      Sample_1 "Sample #1"
     Sample 2 "Sample #2"
     Sample 3 "Sample #3".
MISSING VALUE Sample 1 (0999) Sample 2 (0999) Sample 3 (0999).
BEGIN DATA.
0039 0100 0100
0042 0004 0004
0040 0007 0007
0037 0096 0030
0041 0080 0080
0999 0003 0030
0999 0001 0042
0999 0010 0002
0999 0002 0999
END DATA.
FREQUENCIES VARIABLES = Sample_1 Sample_2 Sample_3 / STATISTICS ALL.
[Next command's output on page 6
finish
```



Test: Student's t-test with two independent samples

Thomas W. MacFarland, Ed.D. Author:

Joseph, Marjory L., and William D. Joseph. RESEARCH FUNDAMENTALS IN HOME ECONOMICS. Source:

Redondo Beach, California: Plycon Press,

ISBN 0-8087-3415-6 Page 182 1979.

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if

there are true differences (alpha = .05) between

Group #1 and Group #2.

Table 1 Summary Data

| Group #1 | | | | | Group | p #2
 | |
|----------|----|----|----|----|-------|----------|----|
| 36 | 35 | 39 | 46 | 26 | 27 | 37 | 29 |
| 31 | 36 | 29 | 31 | 38 | 36 | 29 | 36 |
| 43 | 38 | 33 | 32 | 33 | 24 | 22 | 28 |
| 42 | 47 | 47 | 36 | 25 | 31 | 31 | 30 |

Note: In addition, calculate descriptive statistics for

each group.

Ho: There is no difference between Group #1 and Group

#2 (alpha = .05).

Answer(s) can be found in t_inep.lis. Answer: Briefly,

Computed t = 3.89

Criterion t = 1.697 (alpha = .05, df = 30)

Computed t (3.89) > Criterion t (1.697)

Reject Ho differences are significant

Be sure to rename spss.lis to t_inep.lis.

. .

DATA LIST /

Group 01



*

* *

* *

*

*

* *

*

*

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*

*

*

*

*

Notes for SPSS Studentware

14

```
Score 03-04.
VARIABLE LABELS
                "Group: Group 1 or Group 2"
     Group
                "Measured Datum".
     Score
VALUE LABELS
                1 'Group #1'
     Group
                2 'Group #2'.
BEGIN DATA.
1 36
1 35
1 39
1 46
1 31
1 36
  29
1 31
1 43
1 38
1 33
1 32
1 42
1 47
1 47
1 36
2 26
2 27
2 37
2 29
2 38
2 36
2 29
2 36
2 33
2 24
2 22
2 28
2 25
2 31
2 31
2 30
END DATA.
                             SPSS/PC+ Studentware
                                                                              11/26/89
include 't inep.dat'.
               Student's t-test with two independent samples
   Test:
   Author:
               Thomas W. MacFarland, Ed.D.
```

Joseph, Marjory L., and William D. Joseph.

RESEARCH FUNDAMENTALS IN HOME ECONOMICS.



Source:

Redondo Beach, California: Plycon Press, 1979. ISBN 0-8087-3415-6 Page 182

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if there are true differences (alpha = .05) between

Group #1 and Group #2.

Table 1
Summary Data

| Group #1 | | | Group | #2
 | | | |
|----------|----------|----------|------------------|----------|----------|----------|----------|
| 36 |
35 | 39 | 46 | 26 | 27 | 37 | 29 |
| 1 | 36 | 29 | 31
32 | 38
33 | 36
24 | 29
22 | 36
28 |
| 43
42 | 38
47 | 33
47 | 3 <i>2</i>
36 | 25 | 31 | 31 | 30 |

Note: In addition, calculate descriptive statistics for

each group.

Ho: There is no difference between Group #1 and Group #2 (alpha = .05).

Answer: Answer(s) can be found in t_inep.lis. Briefly,

Computed t = 3.89

Criterion t = 1.697 (alpha = .05, df = 30)

Computed t (3.89) > Criterion t (1.697)

Reject Ho differences are significant

Be sure to rename spss.lis to t_inep.lis.

DATA LIST /

* * *

Group 01 Score 03-04.

VARIABLE LABELS

Group "Group: Group 1 or Group 2"
Score "Measured Datum".



11/26/89

```
VALUE LABELS
```

Group 1 'Group #1'

2 'Group #2'.

BEGIN DATA.

END DATA.

Page

32 cases are written to the compressed active file.

This procedure was completed at :4:37:13

T-TEST GROUPS = Group (1,2) / VARIABLES = Score

Tudamandanh camalan as aparra an un annu a un annu a

Independent samples of GROUP Group: Group 1 or Group 2

Group 1: GROUP EQ 1 Group 2: GROUP EQ 2

t-test for: SCORE Measured Datum

| | Number of Cases | Mean | Standard
Deviation | Standard
Error |
|-------|-----------------|---------|-----------------------|-------------------|
| Group | 16 | 37.5625 | 5.921 | 1.480 |
| Group | 16 | 30.1250 | 4.843 | 1.211 |

| | | Pooled | Variance E | stimate | Separat | e Variance E | Estimate |
|------------|-----------------|--------|--------------------|---------|------------|-----------------------|-----------------|
| F
Value | 2-Tail
Prob. | | Degrees of Freedom | | t
Value | Degrees of
Freedom | 2-Tail
Prob. |
| 1.50 | .445 | 3.89 | 30 | .001 | 3.89 | 28.86 | .001 |

SPSS/PC+ Studentware

This procedure was completed at 14:40:06

Page 3 SPSS/PC+ Studentware 11/26/89 finish

[Next command's output on page 1 include 't_inep.dat'.

[* Test: Student's t-test with two independent samples

Author: Thomas W. MacFarland, Ed.D.

Source: Joseph, Marjory L., and William D. Joseph.

RESEARCH FUNDAMENTALS IN HOME ECONOMICS. Redondo Beach, California: Plycon Press,

1979. ISBN 0-8087-3415-6 Page 182

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if



there are true differences (alpha = .05) between Group #1 and Group #2.

Table 1
Summary Data

| Group #1 | | | _ | Group |) #2
 | | |
|----------|----|----|----|-------|----------|----|----|
|
36 | 35 | 39 | 46 | 26 | 27 | 37 | 29 |
| 31 | 36 | 29 | 31 | 38 | 36 | 29 | 36 |
| 43 | 38 | 33 | 32 | 33 | 24 | 22 | 28 |
| 42 | 47 | 47 | 36 | 25 | 31 | 31 | 30 |

Note:

In addition, calculate descriptive statistics for each group.

Ho:

There is no difference between Group #1 and Group #2 (alpha = .05).

Answer:

Answer(s) can be found in t_inep.lis. Briefly,

Computed t = 3.89

Criterion t = 1.697 (alpha = .05, df = 30)

Computed t (3.89) > Criterion t (1.697)

Reject Ho differences are significant

Be sure to rename spss.lis to t_inep.lis.

DATA LIST /

Group 01 Score 03-04.

[VARIABLE LABELS

Group "Group: Group 1 or Group 2"
Score "Measured Datum".

VALUE LABELS

Group 1 'Group #1'

2 'Group #2'.

BEGIN DATA.

[1 36



Notes for SPSS Studentware

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```
[1 35
ຸ້າ 39
[1 46
[1 31
[1 36
[1 29
[1 31
[1 43
[1 38
[1 33
[1 32
Ť1 42
[1 47
[1 47
[1 36
[2 26
[2 27
[2 37
[2 29
[2 31
[2 31
[2 30
[END DATA.
T-TEST GROUPS = Group (1,2) / VARIABLES = Score. [Next command's output on page 3 finish
```



Test: Student's t-test with a paired sample

Author: Thomas W. MacFarland, Ed.D.

Source: Joseph, Marjory L., and William D. Joseph.

RÉSEARCH FUNDAMENTALS IN HOME ECONÔMICS. Redondo Beach, California: Plycon Press,

1979. ISBN 0-8087-3415-6 Page 190

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if

there are true differences (alpha = .05) between

Method #1 and Method #2.

Table 1
Summary Data

| Pair | Method #1 | Method #2 |
|------|-----------|-----------|
| 01 | 27 | 21 |
| 02 | 22 | 20 |
| 03 | 18 | 16 |
| 04 | 26 | 19 |
| 05 | 19 | 16 |
| 06 | 18 | 16 |
| 07 | 24 | 18 |
| 08 | 16 | 12 |
| 09 | 14 | 10 |
| 10 | 13 | 16 |
| 11 | 13 | 12 |
| 12 | 12 | 10 |

Note:

In addition, calculate descriptive statistics for



```
each method.
              There is no difference between Method #1 and
  Ho:
              Method #2 (alpha = .05).
              Answer(s) can be found in t_pair.lis. Briefly,
   Answer:
              Computed t = 3.85
              Criterion t = 1.796 (alpha = .05, df = 11)
              Computed t (3.85) > Criterion t (1.796)
              Reject Ho ..... differences are significant
              Be sure to rename spss.lis to t_pair.lis.
DATA LIST /
     Pair
              01-02
     Method 1 04-05
     Method 2 07-08.
VARIABLE LABELS
     Pair
              "Matched Pair: S1 to M #1; S2 to M_#2"
     Method 1 "Score for Subject Assigned to Method #1"
     Method 2 "Score for Subject Assigned to Method #2".
BEGIN DATA.
01 27 21
02 22
      20
03 18 16
04 26 19
05 19 16
06 18 16
07 24 18
08 16 12
09 14 10
10 13 16
11 13
      12
12 12 10
END DATA.
                            SPSS/PC+ Studentware
                                                                          11/26/89
include 't_pair.dat'.
              Student's t-test with a paired sample
   Test:
   Author:
              Thomas W. MacFarland, Ed.D.
              Joseph, Marjory L., and William D. Joseph.
   Source:
                   RESEARCH FUNDAMENTALS IN HOME ECONOMICS.
                    Redondo Beach, California: Plycon Press,
```

1979. ISBN 0-8087-3415-6 Page 190



SPSS/PC+ Studentware Software:

Based on data provided in Table 1, determine if Scenario:

there are true differences (alpha = .05) between

Method #1 and Method #2.

Table 1 Summary Data

| Pair | Method #1 | Method #2 |
|------|-----------|-----------|
| 01 | 27 | 21 |
| 02 | 22 | 20 |
| 03 | 18 | 16 |
| 04 | 26 | 19 |
| 05 | 19 | 16 |
| 06 | 18 | 16 |
| 07 | 24 | 18 |
| 80 | 16 | 12 |
| 09 | 14 | 10 |
| 10 | 13 | 16 |
| 11 | 13 | 12 |
| 12 | 12 | 10 |

Note:

*

* *

* *

* * *

* * * À * *

In addition, calculate descriptive statistics for each method.

Ho:

There is no difference between Method #1 and Method #2 (alpha = .05).

Answer:

Answer(s) can be found in t_pair.lis. Briefly,

Computed t = 3.85



```
Criterion t = 1.796 (alpha = .05, df = 11)
               Computed t (3.85) > Criterion t (1.796)
               Reject Ho .... differences are significant
               Be sure to rename spss.lis to t_pair.lis.
DATA LIST /
     Pair
               01-02
     Method 1 04-05
     Method 2 07-08.
VARIABLE LABELS
               "Matched Pair: S1 to M_#1; S2 to M_#2"
     Pair
     Method 1 "Score for Subject Assigned to Method #1" Method 2 "Score for Subject Assigned to Method #2".
BEGIN DATA.
END DATA.
     12 cases are written to the compressed active file.
This procedure was completed at 14:57:23
T-TEST PAIRS = Method 1 Method 2.
                             SPSS/PC+ Studentware
                                                                              11/26/89
Page
                          METHOD 1
                                     Score for Subject Assigned to Method #1
Paired samples t-test:
                                     Score for Subject Assigned to Method #2
                          METHOD 2
                                                Standard
Variable
             Number
                                    Standard
            of Cases
                          Mean
                                   Deviation
                                                  Error
                                       5.231
                         18.5000
                                                  1.510
METHOD 1
                12
                12
                         15.5000
                                       3.754
                                                  1.084
METHOD 2
                                     3
                                              2-Tail 3
                                                           t
                                                                Degrees of
                                                                              2-Tail
(Difference) Standard
                          Standard
     Mean
             Deviation
                            Error
                                     3
                                        Corr. Prob.
                                                     3
                                                         Value
                                                                   Freedom
                                                                               Prob.
                                     3
                                                .000 3
                                                                     11
                                                                               .003
    3.0000
                 2.697
                              .778
                                     3
                                          .870
                                                          3.85
This procedure was completed at 14:59:22
finish
[Next command's output on page
include 't_pair.dat'.
[ *
                Student's t-test with a paired sample
    Test:
[*
[*
                Thomas W. MacFarland, Ed.D.
    Author:
```



Source:

Joseph, Marjory L., and William D. Joseph.

RÉSEARCH FUNDAMENTALS IN HOME ECONOMICS. Redondo Beach, California: Plycon Press,

1979. ISBN 0-8087-3415-6 Page 190

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there are true differences (alpha = .05) between Method #1 and Method #2.

Table 1
Summary Data

| Pair | Method #1 | Method #2 |
|------|-----------|-----------|
| 01 | 27 | 21 |
| 02 | 22 | 20 |
| 03 | 18 | 16 |
| 04 | 26 | 19 |
| 05 | 19 | 16 |
| 06 | 18 | 16 |
| 07 | 24 | 18 |
| 08 | 16 | 12 |
| 09 | 14 | 10 |
| 10 | 13 | 16 |
| 11 | 13 | 12 |
| 12 | 12 | 10 |

Note:

In addition, calculate descriptive statistics for each method.

Ho:

[*

There is no difference between Method #1 and



```
Method #2 (alpha = .05).
               Answer(s) can be found in t pair.lis. Briefly,
    Answer:
               Computed t = 3.85
               Criterion t = 1.796 (alpha = .05, df = 11)
               Computed t (3.85) > Criterion t (1.796)
               Reject Ho .... differences are significant
               Be sure to rename spss.lis to t pair.lis.
DATA LIST /
      Pair
               01-02
      Method_1 04-05
Method_2 07-08.
[VARIABLE LABELS
      Pair
                "Matched Pair: S1 to M #1; S2 to M #2"
      Method_1 "Score for Subject Assigned to Method #1"
      Method_2 "Score for Subject Assigned to Method #2".
BEGIN DATA.
[01 27 21
[02 22 20
03 18 16
 04 26 19
 05 19
       16
 06 18
       16
[ 07
    24
       18
08 16
       12
[09 14 10
[10 13 16
[11 13 12
[12 12 10
[END DATA.
T-TEST PAIRS = Method_1 Method_2.
[Next command's output on page
finish
```



Chi-square (using all data) Test:

Thomas W. MacFarland, Ed.D. Author:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 664

Software: SPSS/PC+ Studentware

Source:

Based on data provided in Table 1, determine if Scenario:

there are true differences (alpha = .05) between

type of response and type of commitment to a

staged crime.

Table 1 Summary Data

| | | Commitment | | | | |
|--------------|-------------------------------------|---------------------------------|----------------------------------|--|--|--|
| | | Committed | Not Committed | | | |
| | Intervened | 26 | 6 | | | |
| Respon | ise | | | | | |
| Di | d Not Intervene | 13 | 34 | | | |
| Note. | For this analysis used: | the following | ng codes are | | | |
| | Intervened and Co | ommitted | 1 1 | | | |
| | Intervened and No | ot Committed | 1 2 | | | |
| | Did Not Intervene | e and Committe | ed 2 1 | | | |
| | Did Not Interven | e and Not Com | mitted 2 2 | | | |
| There to vio | is no difference letim and response | ratween degree
to a staged c | e of commitment
rime (alpha = | | | |



Ho:

```
Answer(s) can be found in chi-fq.lis. Briefly,
  Answer:
              Computed chi = 19.78
              Criterion chi = 3.84 (alpha = .05, df = 1)
              Computed chi (19.78) > Criterion chi (3.84)
              Reject Ho .... differences are significant
              Be sure to rename spss.lis to chi-fq.lis.
DATA LIST /
    Response
    Commit_t
VARIABLE LABELS
     Response "Response by Bystander to a Staged Crime"
     Commit_t "Extent of Commitment to the Victim".
VALUE LABELS
     Response 1 'Intervened'
              2 'Did Not Intervene' /
     Commit_t 1 'Committed'
              2 'Not Committed'.
BEGIN DATA.
1 1
1 1
1 1
1 1
1 1
1 1
1 1
1 1
  1
  1
1 1
1 1
1 1
1 1
1 1
1 1
1 1
```



2 2 END DATA.

SPSS/PC+ Studentware

11/26/89

include 'chi-fq.dat'.

Test:

Chi-square (using all data)

Author:

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 664

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there are true differences (alpha = .05) between type of response and type of commitment to a staged crime.

Table 1 Summary Data

| | | Commitment | | | |
|--------|-------------------------|--------------|---------------|--|--|
| | | Committed | Not Committed | | |
| | Intervened | 26 | 6 | | |
| Respon | se | | | | |
| Di | d Not Intervene | 13 | 34 | | |
| Note. | For this analysis used: | the followi | ng codes are | | |
| | Intervened and Co | mmitted | 1 1 | | |
| | Intervened and No | t Committed | 1 2 | | |
| | Did Not Intervene | and Committe | ed 2 1 | | |
| | Did Not Intervene | and Not Com | mitted 2 2 | | |



```
Ho:
              There is no difference between degree of commitment
              to victim and response to a staged crime (alpha =
              .05).
   Answer:
              Answer(s) can be found in chi-fg.lis. Briefly,
              Computed chi = 19.78
              Criterion chi = 3.84 (alpha = .05, df = 1)
              Computed chi (19.78) > Criterion chi (3.84)
              Reject Ho .... differences are significant
              Be sure to rename spss.lis to chi-fq.lis.
DATA LIST /
   Response
    Commit_t
              3.
VARIABLE LABELS
     Response "Response by Bystander to a Staged Crime"
     Commit t "Extent of Commitment to the Victim".
VALUE LABELS
    Response 1 'Intervened'
              2 'Did Not Intervene' /
     Commit t 1 'Committed'
              2 'Not Committed'.
BEGIN DATA.
END DATA.
     79 cases are written to the compressed active file.
This procedure was completed at 15:22:20
CROSSTABS TABLES = Response by Commit_t / OPTIONS 14 15 / STATISTICS 1.
 ***** Given WORKSPACE allows for
                                   3412 Cells with
     2 Dimensions for CROSSTAB problem *****
Page
       2
                           SPSS/PC+ Studentware
                                                                        11/26/89
Crosstabulation:
                     RESPONSE
                               Response by Bystander to a Staged Crime
                  By COMMIT T
                              Extent of Commitment to the Victim
                   |Committe|Not Comm|
            Count
COMMIT_TD> Exp Val
                             itted
                    đ
                                        Row
           Residual
                          1
                                       Total
```



| | | | . 1 | | |
|---|---|---|--|---|---------------------------|
| RESPONSE Intervened | 1 | 26
15.8
10.2 | 6
16.2
-10.2 | 32
40.5% | |
| Did Not Inter | 2
rven | 13
23.2
-10.2 | 34
23.8
10.2 | 47
59.5% | |
| | lumn
otal | 39
49.4% | 40
50.6% | 79
100.0% | |
| Chi-Square | D.F. | Sig | nificance | Min E.F. | Cells with E.F.< 5 |
| 19.78240
: 21.87383 | 1 | | .0000 | 15.797
(Before Y | None
ates Correction) |
| Number of Miss: | ing O | bservatio | ns = | 0 | |
| Page 3 | |
S | PSS/PC+ St | tudentware | 11/26/89 |
| <pre>[* [* Author: [* [* Source: [*] [* [*] [*] [*] [* [*] [</pre> | s out;
q.dat
Chi-
Thom
McCl | put on parising square (under the square of statistical caliform ISBN 0-0000-0000-00000-0000000000000000000 | ge 1 sing all of Farland, 1 s T., and CS, 4th edia: Dello De | data)
Ed.D.
Frank H. Dietric
dition. San Frar
en Publishing Com
4 Page 664 | ncisco,
npany, 1988. |
| * Scenario:
 *
 *
 *
 * | ther
type | e are tru | ne differe
onse and t | in Table 1, detences (alpha = .05) ype of commitment | 5) between |
| [*
[* | | | Ta | ble 1 | |
| [*
[*
[* | | | Summ | ary Data | |
| 1 - | | | | | |



Commitment

| * | | | | | |
|--|-------------------------------------|------------------|--|--------------------------------|----------------------------------|
| * * | | | | Committed | Not Committed |
| * | | | Intervened | 26 | 6 |
| * | | Respons | se | | |
| * * | | Dic | Not Intervene | 13 | 34 |
| *
*
* | | Note. | For this analysis used: | the following | ng codes are |
| * | | | Intervened and Co | mmitted | 1 1 |
| *
* | | | Intervened and No | t Committed . | 1 2 |
| *
* | | | Did Not Intervene | and Committe | ed 2 1 |
| * | | | Did Not Intervene | and Not Com | mitted 2 2 |
| [*
[*
[* | Ho: | There : to vict | is no difference b
tim and response t | etween degree
o a staged c | e of commitment
rime (alpha = |
| [* | Answer: | Answer | (s) can be found i | n chi-fq.lis | . Briefly, |
| [*
[* | | Compute | ed chi = 19.78 | | |
| [*
[* | | Criter | ion chi = 3.84 (a | alpha = .05, | df = 1) |
| [*
[* | | Comput | ed chi (19.78) > (| Criterion chi | (3.84) |
| [*
[* | | | Ho differen | | |
| [* | | _ | e to rename spss. | | |
| [
[DA!
[| TA LIST /
Response
Commit_t | 1 | _ | | |
| [VA]
[
[| RIABLE LABE
Response
Commit_t | "Respo | nse by Bystander tof Commitment t | to a Staged C
o the Victim" | crime" |
|
 AV

 | LUE LABELS
Response
Commit_t | 2 'Did
1 'Com | Not Intervene'/ | | |







Chi-square (using WEIGHT, to avoid extra keying) Test:

Thomas W. MacFarland, Ed.D. Author:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988. ISBN 0-02-379260-4 Page 650 Source:

Software: SPSS/PC+ Studentware

Based on data provided in Table 1, determine if Scenario: there are true differences (alpha = .05) between

car size and manufacturer.

Table 1 Summary Data

| | | | Manufacturer | | | |
|--------|----------------|-----------|--------------|---------|-------------|-------|
| | | | A | В | С | D |
| | | Small | 157 | 65 | 181 | 10 |
| Car Si | ze Inte | rmediate | 126 | 82 | 142 | 46 |
| | | Large | 58 | 45 | 60 | 28 |
| Note. | For this used: | analysis | the fo | llowing | codes a | are |
| | Small Ca | r and Man | ufactur | er A | .` | . 1 1 |
| | Small Ca | r and Man | ufactur | er B | | . 1 2 |
| | Small Ca | r and Man | ufactur | er C | | . 1 3 |
| | Small Ca | r and Man | ufactur | er D | • • • • • • | . 1 4 |
| | Intermed | iate Car | and Man | ufactur | er A | . 2 1 |
| | Intermed | iate Car | and Man | ufactur | er B | . 2 2 |
| | Intermed | iate Car | and Man | ufactur | er C | . 2 3 |

```
Intermediate Car and Manufacturer D ... 2 4
                     Large Car and Manufacturer A ..... 3 1
                     Large Car and Manufacturer B ..... 3 2
*
                     Large Car and Manufacturer C ..... 3 3
*
                     Large Car and Manufacturer D ...... 3 4
*
*
              There is no difference between car size amd type
   Ho:
              of manufacturer (alpha = .05).
              Answer(s) can be found in chi-wt.lis.
                                                      Briefly,
   Answer:
*
              Computed chi = 45.81
              Criterion chi = 12.59 (alpha = .05, df = 6)
              Computed chi = (45.81) > Criterion chi (12.59)
              Reject Ho .... differences are significant
4
              Be sure to rename spss.lis to chi-wt.lis.
DATA LIST /
     Freq
              01-03
                 05
     Car
                 07.
     Manuf er
WEIGHT by Freq.
VARIABLE LABELS
              "Summative Frequency Count"
     Freq
              "Type (e.g., size) of Car"
     Car
     Manuf_er "Manufacturer".
VALUE LABELS
                         2 'Intermediate' 3 'Large'
              1 'Small'
     Car
     Manuf er 1 'A'
                         2 'B'
                                           3 101
BEGIN DATA.
157 1 1
065 1 2
181 1 3
010 1 4
126 2 1
082 2
142 2 3
046 2 4
058 3 1
```



045 3 2 060 3 3 028 3 4 END DATA.

SPSS/PC+ Studentware

11/26/89

include 'chi-wt.dat'.

Chi-square (using WEIGHT, to avoid extra keying) Test:

Author:

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 650

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there are true differences (alpha = .05) between car size and manufacturer.

Table 1 Summary Data

| | | | | | Manufacturer | | | |
|--------|-----|---------|----------|---------|--------------|-------------|-------|--|
| | | | | A | В | С | D | |
| | | | Small | 157 | 65 | 181 | 10 | |
| Car Si | .ze | Inter | mediate | 126 | 82 | 142 | 46 | |
| | | | Large | 58 | 45 | 60 | 28 | |
| Note. | For | | analysis | the fo | llowing | codes a | are | |
| | Sma | ıll Car | and Man | ufactur | er A | • • • • • • | . 1 1 | |
| | Sma | ll Car | and Man | ufactur | er B | | . 12 | |

Small Car and Manufacturer C 1 3



```
Intermediate Car and Manufacturer A ... 2 1
                     Intermediate Car and Manufacturer B ... 2 2
                     Intermediate Car and Manufacturer C ... 2 3
                     Intermediate Car and Manufacturer D ... 2 4
                     Large Car and Manufacturer A ..... 3 1
                     Large Car and Manufacturer B ..... 3 2
                     Large Car and Manufacturer C ..... 3 3
                     Large Car and Manufacturer D ...... 3 4
              There is no difference between car size amd type
  Ho:
              of manufacturer (alpha = .05).
  Answer:
              Answer(s) can be found in chi-wt.lis.
              Computed chi = 45.81
              Criterion chi = 12.59 (alpha = .05, df = 6)
              Computed chi = (45.81) > Criterion chi (12.59)
              Reject Ho .... differences are significant
              Be sure to rename spss.lis to chi-wt.lis.
DATA LIST /
     Freq
              01-03
                 05
     Car
                 07.
    Manuf er
WEIGHT by Freq.
VARIABLE LABELS
     Freq
              "Summative Frequency Count"
              "Type (e.g., size) of Car"
     Car
    Manuf er "Manufacturer".
VALUE LABELS
              1 'Small'
                         2 'Intermediate' 3 'Large'
     Car
     Manuf_er 1 'A'
                         2 'B'
                                            'C'
BEGIN DATA.
END DATA.
     12 cases are written to the compressed active file.
```

Small Car and Manufacturer D 1 4



*

*

*

* *

*

*

This procedure was completed at 15:45:40

CROSSTABS TABLES = Car by Manuf_er / OPTIONS 14 15 / STATISTICS 1.

***** Given WORKSPACE allows for 3412 Cells with 2 Dimensions for CROSSTAB problem *****

11/26/89 Page 2 SPSS/PC+ Studentware

Crosstabulation: CAR Type (e.g., size) of Car By MANUF ER Manufacturer

| MANUF_ERD> | Count
Exp Val
Residual | A
1 | B
2 | C
3 | D 4 | Row
Total |
|--------------|------------------------------|----------------------|---------------------|----------------------|---------------------|----------------|
| CAR
Small | 1 | 157
140.8
16.2 | 65
79.3
-14.3 | 181
158.2
22.8 | 10
34.7
-24.7 | 413
41.3% |
| Intermed | 2
iate | 126
135.0
-9.0 | 82
76.0
6.0 | 142
151.7
-9.7 | 46
33.3
12.7 | 396
39.6% |
| Large | 3 | 58
65.1
-7.1 | 45
36.7
8.3 | 60
73.2
-13.2 | 28
16.0
12.0 | 191
19.1% |
| | Column
Total | 341
34.1% | 192
19.2% | 383
38.3% | 84
8.4% | 1000
100.0% |

| Page 3 | 3 SPSS/PC+ Studentware | | | 11/26/89 |
|------------|------------------------|--------------|----------|--------------------|
| Chi-Square | D.F. | Significance | Min E.F. | Cells with E.F.< 5 |
| 45.81247 | 6 | .0000 | 16.044 | None |

Number of Missing Observations =

This procedure was completed at 15:47:33 finish

[Next command's output on page 1 include 'chi-wt.dat'.

Chi-square (using WEIGHT, to avoid extra .eying) Test:

Author: Thomas W. MacFarland, Ed.D.



Source:

McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 650

Software:

SPSS/PC+ Studentware

Scenario:

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<u>`</u>* ř * Based on data provided in Table 1, determine if there are true differences (alpha = .05) between

car size and manufacturer.

Table 1 Summary Data

| | | | | | Manufa | cturer | |
|--------|------------|--------|----------|----------|---------|-------------|-------|
| | | | | A | В | С | D |
| | | · • | Small | 157 | 65 | 181 | 10 |
| Car Si | ze | Inter | mediate | 126 | 82 | 142 | 46 |
| | | | Large | 58 | 45 | 60 | 28 |
| Note. | For
use | | analysis | the fo | llowing | codes a | are |
| | Sma | ll Car | and Mar | nufactur | er A | • • • • • • | . 1 1 |
| | Sma | ll Car | and Mar | nufactur | er B | | . 1 2 |
| | Sma | ll Car | and Mar | nufactur | er C | | . 1 3 |
| | Sma | ll Car | and Mar | nufactur | er D | | . 1 4 |
| | Int | ermedi | ate Car | and Man | ufactur | er A | . 2 1 |
| | Int | ermedi | ate Car | and Man | ufactui | rer B | . 2 2 |
| | Int | ermedi | ate Car | and Man | ufactu | cer C | . 2 3 |
| | Int | ermedi | ate Car | and Man | ufactu | rer D | . 2 4 |

40

```
Large Car and Manufacturer A ...... 3 1
                      Large Car and Manufacturer B ..... 3 2
                      Large Car and Manufacturer C ..... 3 3
                      Large Car and Manufacturer D ..... 3 4
   Ho:
               There is no difference between car size amd type
               of manufacturer (alpha = .05).
   Answer:
              Answer(s) can be found in chi-wt.lis. Briefly,
              Computed chi = 45.81
              Criterion chi = 12.59 (alpha = .05, df = 6)
              Computed chi = (45.81) > Criterion chi (12.59)
              Reject Ho .... differences are significant
۴ ۲
              Be sure to rename spss.lis to chi-wt.lis.
[DATA LIST /
     Freq
              01-03
     Car
                 05
                 07.
     Manuf er
WEIGHT by Freq.
VARIABLE LABELS
     Freq
               "Summative Frequency Count"
               "Type (e.g., size) of Car"
     Manuf er "Manufacturer".
VALUE LABELS
               1 'Small'
                          2 'Intermediate'
                                           3 'Large'
     Manuf er 1 'A'
                          2 'B'
                                             'C'
[BEGIN DATA.
157 1 1
065 1
181
    1
010
    1
      4
126
    2
082
    2
      2
    2 3
142
f058 3 1
[045 3 2
[060 3 3
028 3 4
```



41

[END DATA.

CROSSTABS TABLES = Car by Manuf_er / OPTIONS 14 15 / STATISTICS 1. [Next command's output on page 4 finish



Pearson's product-moment coefficient of Test:

correlation

Author: Thomas W. MacFarland, Ed.D.

Source: McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

SPSS/PC+ Studentware Software:

Scenario:

Based on data provided in Table 1, determine if there is a correlation (alpha = .05) between number of games won (baseball) and team batting average. (American League teams from the 1986 season will

serve as the example for this exercise).

Table 1 Summary Data

| Team | Number of Games
Won | Team Batting
Average |
|------------|------------------------|-------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | . 258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |
| | | |



```
.252
                                          76
              Kansas City
                                                            .252
                                           76
              Oakland
                                                            .247
                                           72
              Chicago
              There is no association between number of games won
  Ho:
              and team batting average (alpha = .05).
              Answer(s) can be found in pearson.lis.
                                                        Briefly,
  Answer:
              Computed r = .600
              Criterion r = .458 (alpha = .05, n = 14)
              Computed r (.600) > Criterion r (.458)
              Reject Ho .... the association is significant
              Be sure to rename spss.lis to pearson.lis.
              Use (a) to signify an alphabetical string when key-
  Note:
              ing baseball teams.
DATA LIST /
     Team
              01-20 (a)
              22-23
     G Won
              25-28.
     TBA
VARIABLE LABELS
               "American League, 1986 Season"
     Team
               "Number of Games Won"
     G Won
               "Team Batting Average".
     TBA
BEGIN DATA.
                      84 .284
Cleveland
                      90 .271
New York
Boston
                      95 .271
Toronto
                      86 .269
                      87 .267
Texas
                      87 .263
Detroit
                      71 .261
Minnesota
                      73 .258
Baltimore
                      92 .255
California
                      77 .255
Milwaukee
                      67 .253
Seattle
                      76 .252
Kansas City
                      76 .252
72 .247
Oakland
Chicago
END DATA.
```

SPSS/PC+ Studentware

٠,



include 'pearson.dat'.

Pearson's product-moment coefficient of Test:

correlation

Author: Thomas W. MacFarland, Ed.D.

McClave, James T., and Frank H. Dietrich, II. Source:

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if

there is a correlation (alpha = .05) between number of games won (baseball) and team batting average. (American League teams from the 1986 season will

serve as the example for this exercise).

Table 1 Summary Data

| Team | Number of Games
Won | Team Batting
Average |
|------------|------------------------|-------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |



| L | | | | | | |
|----------------------|-------------------------------|---|------------------------|----------------------------------|---------------------|----------|
| • | | Kansas City | | 76 | .252 | |
| • | | Oakland | | 76 | .252 | |
| k
k | | Chicago | | 72 | .247 | |
| *
* Ho:
* | | There is no a and team batt | ssociatio
ing avera | n between numb
ge (alpha = .0 | per of games won | |
| | wer: | Answer(s) can | be found | in pearson.li | is. Briefly, | |
| k
k | | Computed r | = .600 | | | |
| *
* | | Criterion r | = .458 (a | alpha = .05, n | = 14) | |
| k | | Computed r (. | 600) > Cr | iterion r (.4 | 58) | |
| *
* | | Reject Ho | the as | sociation is | significant | |
| * | | Be sure to re | name spss | lis to pearso | on.lis. | |
| *
* Not
* | e: | Use (a) to si ing baseball | gnify an
teams. | alphabetical | string when key- | |
| G | IST /
eam
Won
BA | 01-20 (a)
22-23
25-28. | | | | |
| T | BLE LABEI
eam
Won
BA | LS
"American Lea
"Number of Ga
"Team Batting | mes Won" | | | |
| BEGIN
END DA
1 | TA. | are written t | o the cor | mpressed activ | e file. | |
| This p
CORREI | rocedur
ATION V | e was complete
ARIABLES = G_W | ed at 16:2
Non with | 20:18
TBA / OPTIONS | 3 5 / STATISTICS 1. | |
| Page | 2 | | SPSS/PC+ | Studentware | | 11/26/89 |
| Variab | ole | Cases | Mean | Std De | v | |
| g_won
TBA | | 14 8
14 | 30.9286
.2613 | 8.818
.010 | | |
| Page | 3 | ~~~~~~ | SPSS/PC+ | Studentware | | 11/26/89 |
| 2 | | | | | | |



Correlations: TBA

G_WON

.6003 14) P = .023

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

This procedure was completed at 16:21:33

finish

[Next command's output on page

include 'pearson.dat'.

Test:

Pearson's product-moment coefficient of

correlation

Author:

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there is a correlation (alpha = .05) between number of games won (baseball) and team batting average. (American League teams from the 1986 season will

serve as the example for this exercise).

Table 1 Summary Data

| Team | Number of Games
Won | Team Batting
Average |
|-----------|------------------------|-------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |



| Texas | 87 | .267 |
|-------------|----|------|
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |
| Kansas City | 76 | .252 |
| Oakland | 76 | .252 |
| Chicago | 72 | .247 |

Ho:

[* [*

There is no association between number of games won and team batting average (alpha = .05).

Answer:

Answer(s) can be found in pearson.lis. Briefly,

Computed r = .600

Criterion r = .458 (alpha = .05, n = 14)

Computed r (.600) > Criterion r (.458)

Reject Ho the association is significant

Be sure to rename spss.lis to pearson.lis.

Note:

Use (a) to signify an alphabetical string when keying baseball teams.

DATA LIST /

Team 01-20 (a) G Won 22-23 TBA 25-28.

VARIABLE LABELS

Team "American League, 1986 Season"

G Won "Number of Games Won" TBA "Team Batting Average".

BEGIN DATA. Cleveland

eveland 84 .284



48

```
[Minnesota
                             71 .261
[Baltimore
                             73 .258
[California
                             92 .255
Milwaukee
                             77 .255
Seattle
                             67
                                 .253
[Kansas_City
[Oakland
                             76 .252
76 .252
[Chicago
[END DATA.
                             72 .247
CORRELATION VARIABLES = G_Won with TBA / OPTIONS 3 5 / STATISTICS 1. [Next command's output on page 4
```

90 .271

95 .271

86 .269

87 .267

87 .263



[New_York [Boston

Toronto

Detroit

Texas

finish

Oneway Analysis of Variance (ANOVA), with Test: mean comparison (e.g., Tukey)

Thomas W. MacFarland, Ed.D. Author:

McClave, James T., and Frank H. Dietrich, II.
STATISTICS, 4th edition. San Francisco,
California: Dellen Publishing Company, 1988.
ISBN 0-02-379260-4 Page 505

SPSS/PC+ Studentware Software:

Based on data provided in Table 1, determine if Scenario:

there are true differences (alpha = .05) between

Nematocides #1, #2, #3, and #4.

Table 1 Yield (Pounds per Plot for the Same Variety of Tomatoes) by Nematocide Treatment

| | Nemato | ocide | |
|------|--------|-------|------|
| 1 | 2 | 3 | 4 |
| 18.6 | 18.7 | 19.4 | 19.0 |
| 18.2 | 19.3 | 19.9 | 18.5 |
| 17.6 | 18.9 | 19.7 | 18.6 |
| | | 19.1 | |

Note:

Source:

In addition, calculate descriptive statistics for each group.

Ho:

There is no difference in yield between nematocide treatments #1, #2, #3, and #4 (alpha = .05).

Answer:

Answer(s) can be found in anoval.lis. Briefly,

Computed F = 8.63

Criterion F = 3.86 (alpha = .05, df = 3, 9)

```
Computed F (8.63) > Criterion F (3.86)
              Reject Ho .... differences are significant
              Based on the use of Tukey mean comparison,
              Nematocide #3 (19.53) > Nematocide # 1 (18.13).
              The difference between all other comparisons
              is due to chance.
              Be sure to rename spss.lis to anoval.lis.
DATA LIST /
                 01
    Group
    Yield
              03-06.
VARIABLE LABELS
    Group
              "One of Four Nematocides (a Pesticide)"
    Yield
              "Yield of the Same Tomato Variety (Pounds/Plot)".
VALUE LABELS
              1 'Nematocide #1'
    Group
              2 'Nematocide #2'
              3 'Nematocide #3'
              4 'Nematocide #4'.
BEGIN DATA.
1 18.6
1 18.2
1 17.6
2 18.7
2 19.3
2 18.9
3 19.4
3 19.9
3 19.7
3 19.1
4 19.0
4 18.5
4 18.6
END DATA.
                            SPSS/PC+ Studentware
                                                                          11/26/89
include 'anoval.dat'.
   Test:
              Oneway Analysis of Variance (ANOVA), with
              mean comparison (e.g., Tukey)
   Author:
              Thomas W. MacFarland, Ed.D.
   Source:
              McClave, James T., and Frank H. Dietrich, II.
                    STATISTICS, 4th edition. San Francisco,
                    California: Dellen Publishing Company, 1988.
```



ISBN 0-02-379260-4 Page 505

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if there are true differences (alpha = .05) between

Nematocides #1, #2, #3, and #4.

Table 1
Yield (Pounds per Plot for the Same Variety of Tomatoes) by Nematocide Treatment

| | Nemato | ocide | |
|------|--------|-------|------|
| 1 | 2 | 3 | 4 |
| 18.6 | 18.7 | 19.4 | 19.0 |
| 18.2 | 19.3 | 19.9 | 18.5 |
| 17.6 | 18.9 | 19.7 | 18.6 |
| | | 19.1 | |

Note:

In addition, calculate descriptive statistics for each group.

Ho:

*

* * *

*

*

*

*

*

There is no difference in yield between nematocide treatments #1, #2, #3, and #4 (alpha = .05).

Answer:

Answer(s) can be found in anoval.lis. Briefly,

Computed F = 8.63

Criterion F = 3.86 (alpha = .05, df = 3, 9)

Computed F (8.63) > Criterion F (3.86)

Reject Ho differences are significant

Based on the use of Tukey mean comparison,

Nematocide #3 (19.53) > Nematocide # 1 (18.13).



```
The difference between all other comparisons
              is due to chance.
              Be sure to rename spss.lis to anoval.lis.
DATA LIST /
                 01
    Group
              03-06.
    Yield
VARIABLE LABELS
              "One of Four Nematocides (a Pesticide)"
    Group
    Yield
              "Yield of the Same Tomato Variety (Pounds/Plot)".
VALUE LABELS
              1 'Nematocide #1'
    Group
              2 'Nematocide #2'
              3 'Nematocide #3'
              4 'Nematocide #4'.
BEGIN DATA.
END DATA.
     13 cases are written to the compressed active file.
This procedure was completed at 19:53:35
ONEWAY Yield by Group (1,4) / RANGES = TUKEY / STATISTICS 1.
                                                                         11/26/89
Page
       2
                           SPSS/PC+ Studentware
                                -- ONEWAY ---
      Variable YIELD
                            Yield of the Same Tomato Variety (Pounds
   By Variable GROUP
                            One of Four Nematocides (a Pesticide)
                                   Analysis of Variance
                                                                    F
                                                                           F
                                   Sum of
                                                  Mean
                                                                  Ratio
                                                                         Prob.
                         D.F.
                                  Squares
                                                Squares
        Source
Between Groups
                                                                 8.6342
                            3
                                     3.4561
                                                   1.1520
                                                                         .0052
Within Groups
                            9
                                     1.2008
                                                     .1334
                           12
                                     4.6569
Total
                            SPSS/PC+ Studentware
                                                                         11/26/89
Page
                                 - O N E W A Y - - -
                                 Standard
                                            Standard
```

Mean

Count

Deviation



Group

Error

95 Pct Conf Int for Mean

| _ | 2 |
|---|----|
| ~ | ٦. |

| Grp 1
Grp 2
Grp 3
Grp 4 | | 3
3
4
3 | 18.1333
18.9667
19.5250
18.7000 | .5033
.3055
.3500
.2646 | .2906
.1764
.1750
.1528 | 16.8830
18.2077
18.9681
18.0428 | To
To
To | 19.3837
19.7256
20.0819
19.3572 |
|----------------------------------|---|--|--|----------------------------------|----------------------------------|--|----------------|--|
| Total | | 13 | 18.8846 | .6230 | .1728 | 18.5082 | To | 19.2611 |
| Group | | Minimum | Maximum | | | | | |
| Grp 1
Grp 2
Grp 3
Grp 4 | | 17.6000
18.7000
19.1000
18.5000 | 18.6000
19.3000
19.9000
19.0000 | | | | | |
| rotal | | 17.6000 | 19.9000 | | | | | |
| Page | 4 | | SPSS/P | C+ Student | ware | | | 11/26/89 |

ONEWAY-

Variable YIELD Yield of the Same Tomato Variety (Pounds Variable GROUP One of Four Nematocides (a Pesticide) By Variable GROUP

Multiple Range Test

Tukey-HSD Procedure Ranges for the .050 level -

> 4.41 4.41 4.41

The ranges above are table ranges.

The value actually compared with Mean(J)-Mean(I) is..

.2583 * Range * Sqrt(1/N(I) + 1/N(J))

(*) Denotes pairs of groups significantly different at the .050 level

11/26/89 SPSS/PC+ Studentware Page 5

---ONEWAY----

Variable YIELD (Continued)

Yield of the Same Tomato Variety (Pounds

GGGG rrrr

| | | p | p | p | p |
|--------------------|----------------|---|---|---|---|
| Mean | Group | 1 | 4 | 2 | 3 |
| 18.1333
18.7000 | Grp 1
Grp 4 | | | | |
| 18.9667
19.5250 | Grp 2
Grp 3 | * | | | |

This procedure was completed at 19:56:46

finish

[*

[Next command's output on page 1 include 'anoval.dat'.

[*

Oneway Analysis of Variance (ANOVA), with Test:

mean comparison (e.g., Tukey)

Author:

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T , and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 505

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there are true differences (alpha = .05) between Nematocides #1, #2, #3, and #4.

Table 1 Yield (Pounds per Plot for the Same Variety of Tomatoes) by Nematocide Treatment

| | Nemate | ocide | |
|------|--------|-------|------|
| 1 | 2 | 3 | 4 |
| 18.6 | 18.7 | 19.4 | 19.0 |
| 18.2 | 19.3 | 19.9 | 18.5 |
| 17.6 | 18.9 | 19.7 | 18.6 |
| | | 19.1 | |



```
In addition, calculate descriptive statistics for
   Note:
              each group.
              There is no difference in yield between nematocide
   Ho:
              treatments #1, #2, #3, and #4 (alpha = .05).
              Answer(s) can be found in anoval.lis. Briefly,
   Answer:
               Computed F = 8.63
               Criterion F = 3.86 (alpha = .05, df = 3, 9)
               Computed F (8.63) > Criterion F (3.86)
               Reject Ho ..... differences are significant
               Based on the use of Tukey mean comparison,
*
               Nematocide #3 (19.53) > Nematocide # 1 (18.13).
*
*
               The difference between all other comparisons
               is due to chance.
               Be sure to rename spss.lis to anoval.lis.
[DATA LIST /
                  01
    Group
    Yield
               03-06.
VARIABLE LABELS
               "One of Four Nematocides (a Pesticide)"
    Group
               "Yield of the Same Tomato Variety (Pounds/Plot)".
    Yield
VALUE LABELS
                 'Nematocide #1'
    Group
                 'Nematocide #2'
               2
                 'Nematocide #3'
                 'Nematocide #4'.
[BEGIN DATA.
[1 18.6
[1 18.2
[1 17.6
[2 18.7
[2 19.3
[2 18.9
3 19.4
3 19.9
[3 19.7
[3 19.1
[4 19.0
```



56

[4 18.5 [4 18.6 [END DATA. ONEWAY Yield by Group (1,4) / RANGES = TUKEY / STATISTICS 1. [Next command's output on page 6 finish



Twoway Analysis of Variance (ANOVA) Test:

Thomas W. MacFarland, Ed.D. Author:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 544

SPSS/PC+ Studentware Software:

Based on data provided in Table 1, determine if Scenario:

there are true differences (alpha = .05) between type of display, pricing, and interaction(s) of

display and pricing.

Table 1 Summary Data on In-store Promotions: Unit Sales by Display and Pricing Strategy

| | Pricing Strategy | | | | | |
|--------------|------------------|---------|--------------|--|--|--|
| Display | Regular | Reduced | Sell at Cost | | | |
| Normal | 989 | 1,211 | 1,577 | | | |
| | 1,025 | 1,215 | 1,559 | | | |
| | 1,030 | 1,182 | 1,598 | | | |
| Normal Plus | 1,191 | 1,860 | 2,492 | | | |
| | 1,233 | 1,910 | 2,527 | | | |
| | 1,221 | 1,926 | 2,511 | | | |
| Twice Normal | 1,226 | 1,516 | 1,801 | | | |
| | 1,202 | 1,501 | 1,833 | | | |
| | 1,180 | 1,498 | 1,852 | | | |

Note:

Source:

In addition, calculate descriptive statistics for each group.

Ho:

There is no difference in unit sales between variations of in-store promotional displays and pricing strategies (alpha = .05).

Answer:

Answer(s) can be found in anova2.lis. Briefly,



```
there are significant differences between:
                 type of display
             1.
             2.
                 pricing strategy
                 interactions between display and pricing
                                                Signif
             Source of Variation
                                         F
                                                of Prob.
             Main Effects
                                                  .000
                                     2415.632
               DISPLAY
                                     1709.373
                                                  .000
               PRICE
                                                  .000
                                     3121.892
             2-way Interactions
               DISPLAY PRICE
                                      258.067
                                                  .000
             Reject Ho .... differences are significant
             Be sure to rename spss.lis to anova2.lis.
DATA LIST /
    Treat mt 01-02
    Display
                04
    Price
                06
    Sales
             08-11.
VARIABLE LABELS
    Treat_mt "Treatment # (3 Treatments/Cell x 9 Cells)"
             "Type of In-store Promotional Display"
    Display
    Price
             "Pricing Strategy"
    Sales
             "Unit Sales ($) for the Promoted Item".
VALUE LABELS
    Display
             1 'Normal'
                          2 'Normal Plus'
                                            3 'Twice Normal' /
             1 'Regular' 2 'Reduced'
                                            3 'Sell at Cost'.
    Price
BEGIN DATA.
01 1 1 0989
02 1 1 1025
03 1 1 1030
04 1 2 1211
05 1 2 1215
06 1 2 1182
07 1 3 1577
08 1 3 1559
09 1 3 1598
```



10 2 1 1191 11 2 1 1233

SPSS/PC+ Studentware

11/26/89

include 'anova2.dat'.

Test: Twoway Analysis of Variance (ANOVA)

Author:

ND DATA.

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 544

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there are true differences (alpha = .05) between type of display, pricing, and interaction(s) of display and pricing.

Table 1

Summary Data on In-store Promotions: Unit Sales by Display and Pricing Strategy

| | | Pricing Stra | tegy |
|---------|--------------|----------------|----------------|
| Display | Regular | Reduced | Sell at Cost |
| Normal | 989
1,025 | 1,211
1,215 | 1,577
1,559 |



| | 1,030 | 1,182 | 1,598 |
|--------------|-------|-------|-------|
| Normal Plus | 1,191 | 1,860 | 2,492 |
| | 1,233 | 1,910 | 2,527 |
| | 1,221 | 1,926 | 2,511 |
| Twice Normal | 1,226 | 1,516 | 1,801 |
| | 1,202 | 1,501 | 1,833 |
| | 1,180 | 1,498 | 1,852 |

Note:

In addition, calculate descriptive statistics for each group.

Ho:

There is no difference in unit sales between variations of in-store promotional displays and pricing strategies (alpha = .05).

Answer:

Answer(s) can be found in anova2.lis. Briefly, there are significant differences between:

- 1. type of display
- 2. pricing strategy
- 3. interactions between display and pricing

| ======================================= | | *======= |
|---|----------------------------------|----------------------|
| Source of Variation | F | Signif
of Prob. |
| Main Effects
DISPLAY
PRICE | 2415.632
1709.373
3121.892 | .000
.000
.000 |
| 2-way Interactions
DISPLAY PRICE | 258.067
======= | .000 |

Reject Ho differences are significant Be sure to rename spss.lis to anova2.lis.

DATA LIST / Treat_mt 01-02 04 Display 06 Price Sales 08-11.

VARIABLE LABELS

Treat mt "Treatment # (3 Treatments/Cell x 9 Cells)" "Type of In-store Promotional Display" Display



61

```
"Pricing Strategy"
     Price
               "Unit Sales ($) for the Promoted Item".
     Sales
VALUE LABELS
              1 'Normal' 2 'Normal Plus' 1 'Regular' 2 'Reduced'
                                                3 'Twice Normal' /
    Display
                                                3 'Sell at Cost'.
     Price
BEGIN DATA.
END DATA.
     27 cases are written to the compressed active file.
This procedure was completed at 20:44:32 ANOVA Sales by Display (1,3) Price (1,3) / STATISTICS 3.
                             SPSS/PC+ Studentware
                                                                             11/26/89
Page
       2
                           * * CELL
                                           MEANS
                          Unit Sales ($) for the Promoted Item
                SALES
                          Type of In-store Pronotional Display
            BY DISPLAY
                           Pricing Strategy
               PRICE
TOTAL POPULATION
 1550.59
     27)
DISPLAY
                   2
        1
                      1512.11
            1874.56
 1265.11
                9)
                             SPSS/PC+ Studentware
                                                                              11/26/89
Page
PRICE
        1
                   2
 1144.11
            1535.44
                      1972.22
       9)
            (9)(
          PRICE
                   1
                              2
DISPLAY
             1014.67
                       1202.67
                                   1578.00
                             3)
                  3)
```



62

1215.00 1898.67 2510.00 (3) 3) (3) 1505.00 1202.67 1828.67 3) 3)

Page SPSS/PC+ Studentware 11/26/89

* * * A N A L Y S I S O F VARIANCE * * *

Unit Sales (\$) for the Promoted Item SALES BY DISPLAY Type of In-store Promotional Display PRICE Pricing Strategy

| ;
Source of Variation | Sum of
Squares DE | F | Mean
Square | F | Signif
of F |
|-------------------------------------|----------------------|-------------|--|----------------------------------|----------------|
| Main Effects
DISPLAY
PRICE | 1691392.519 | 4
2
2 | 1195111.593
845696.259
1544526.926 | 2415.632
1709.373
3121.892 | .000 |
| 2-way Interactions
DISPLAY PRICE | | 4
4 | 127676.204
127676.204 | 258.067
258.067 | .000 |
| Explained | 5291151.185 | 8 | 661393.898 | 1336.849 | .000 |
| Residual | 8905.333 18 | 8 | 494.741 | | |
| Total | 5300056.519 20 | 6 | 203848.328 | | |
| Page 5 | SPSS/PC+ Studentware | | | 1 | 1/26/89 |

27 Cases were processed.

O Cases (.O PCT) were missing.

This procedure was completed at 20:48:21

finish

[Next command's output on page

include 'anova2.dat'.

Twoway Analysis of Variance (ANOVA) Test:

Thomas W. MacFarland, Ed.D. Author:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988. ISBN 0-02-379260-4 Page 544 Source:

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if there are true differences (alpha = .05) between type of display, pricing, and interaction(s) of display and pricing.

Table 1
Summary Data on In-store Promotions: Unit Sales by Display and Pricing Strategy

| | Pricing Strategy | | | | | |
|--------------|------------------|---------|--------------|--|--|--|
| Display | Regular | Reduced | Sell at Cost | | | |
| Normal | 989 | 1,211 | 1,577 | | | |
| | 1,025 | 1,215 | 1,559 | | | |
| | 1,030 | 1,182 | 1,598 | | | |
| Normal Plus | 1,191 | 1,860 | 2,492 | | | |
| | 1,233 | 1,910 | 2,527 | | | |
| | 1,221 | 1,926 | 2,511 | | | |
| Twice Normal | 1,226 | 1,516 | 1,801 | | | |
| | 1,202 | 1,501 | 1,833 | | | |
| | 1,180 | 1,498 | 1,852 | | | |

Note:

In addition, calculate descriptive statistics for each group.

Ho:

[* [*

*

*

*

*

* * * *

* * *

There is no difference in unit sales between variations of in-store promotional displays and pricing strategies (alpha = .05).

Answer:

Answer(s) can be found in anova2.lis. Briefly, there are significant differences between:

- 1. type of display
- pricing strategy
- interactions between display and pricing



64

```
Signif
               Source of Variation
                                            F
                                                    of Prob.
               Main Effects
                                        2415.632
                                                      .000
                                                      .000
                 DISPLAY
                                        1709.373
                                                      .000
                 PRICE
                                        3121.892
               2-way Interactions
                 DISPLAY PRICE
                                         258.067
                                                      .000
               Reject Ho .... differences are significant
               Be sure to rename spss.lis to anova2.lis.
DATA LIST /
     Treat mt 01-02
     Display
                  04
     Price
                  06
               08-11.
     Sales
VARIABLE LABELS
     Treat_mt "Treatment # (3 Treatments/Cell x 9 Cells)"
               "Type of In-store Promotional Display"
     Display
     Price
               "Pricing Strategy"
     Sales
               "Unit Sales ($) for the Promoted Item".
TVALUE LABELS
     Display
               1 'Normal'
                             2 'Normal Plus'
                                                3 'Twice Normal' /
                             2 'Reduced'
               1 'Regular'
                                                3 'Sell at Cost'.
     Price
BEGIN DATA.
01 1 1 0989
02 1 1 1025
03 1 1 1030
04 1 2 1211
05 1 2 1215
06 1 2 1182
07
   1 3 1577
   1 3 1559
08
09
   1
     3 1598
10
     1 1191
11
     1 1233
[12 2 1 1221
i 13 2 2 1860
f14 2 2 1910
[15 2 2 1926
[16 2
     3 2492
   2
     3 2527
[17
18 2 3 2511
19 3
     1 122€
[20 3 1 1202
```



65

```
[21 3 1 1180
[22 3 2 1516
[23 3 2 1501
[24 3 2 1498
[25 3 3 1801
[26 3 3 1833
[27 3 3 1852
[END DATA.
ANOVA Sales by Display (1,3) Price (1,3) / STATISTICS 3.
[Next command's output on page 6
```



Test:

Using PLOT to display data associated with a correlation study (Pearson's product-moment

coefficient of correlation)

Author:

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there is a correlation (alpha = .05) between number of games won (baseball) and team batting average. (American League teams from the 1986 season will serve as the example for this exercise).

Plot the association.

Table 1 Summary Data

| Team | Number of Games
Won | Team Batting
Average |
|------------|------------------------|-------------------------|
| Clevelar ` | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| | | |



| Seattle | 67 | .253 |
|-------------|----|------|
| Kansas City | 76 | .252 |
| Oakland | 76 | .252 |
| Chicago | 72 | .247 |

Ho:

There is no association between number of games won and team batting average (alpha = .05).

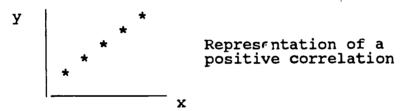
Note.

Use (a) to signify an alphabetical string when keying baseball teams.

Answer:

Answer(s) can be found in plot1.lis. Briefly,

Computed r = .600, a generally moderate positive association.



Be sure to rename spss.lis to plot1.lis.

DATA LIST /

Team 01-20 (a) G_Won 22-23 TBA 25-28.

VARIABLE LABELS

Team "American League, 1986 Season"
G Won "Number of Games Won"
TBA "Team Batting Average".

BEGIN DATA.

Cleveland 84 .284 90 .271 New York 95 .271 Boston 86 .269 Toronto 87 .267 Texas 87 .263 Detroit 71 .261 Minnesota 73 .258 Baltimore 92 .255 California 77 .255 Milwaukee



68

67 .253 Seattle Kansas City 76 .252 Oakland 76 .252 Chicago 72 .247 END DATA.

SPSS/PC+ Studentware

11/26/89

include 'plot1.dat'.

Test:

Using PLOT to display data associated with a correlation study (Pearson's product-moment

coefficient of correlation)

Author:

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there is a correlation (alpha = .05) between number of games won (baseball) and team batting average. (American League teams from the 1986 season will serve as the example for this exercise).

Plot the association.

Table 1 Summary Data

| Team | Number of Games
Won | Team Batting
Average |
|-----------|------------------------|-------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |



69

| Minnesota | 71 | .261 |
|-------------|----|------|
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |
| Kansas City | 76 | .252 |
| Oakland | 76 | .252 |
| Chicago | 72 | .247 |
| | | |

Ho:

There is no association between number of games won and team batting average (alpha = .05).

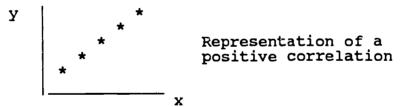
Note.

Use (a) to signify an alphabetical string when keying baseball teams.

Answer:

Briefly, Answer(s) can be found in plot1.lis.

Computed r = .600, a generally moderate positive association.



Be sure to rename spss.lis to plot1.lis.

DATA LIST /

Team 01-20 (a) 22-23 G Won TBA 25-28.

VARIABLE LABELS

Team

"American League, 1986 Season"
"Number of Games Won" G Won TBA "Team Batting Average".

BEGIN DATA.

END DATA.

14 cases are written to the compressed active file.



This procedure was completed at 21:32:48
PLOT HSIZE = 36 / VSIZE = 14 / FORMAT = REGRESSION / PLOT = G_Won with TBA.
PLOT requires 3664 BYTES of workspace for execution.

Page 2 SPSS/PC+ Studentware

11/26/89

************ P L O T *********

Data Information

14 unweighted cases accepted.

SPSS/PC+ Studentware 11/26/89 Page PLOT OF G_WON WITH TBA : N 1 u 90 1 m b е 1 80 O f 1 G 1 1 а 70 m P .246 .258 .27 .282 .264 .276 .252

Team Batting Average

Page 4 SPSS/PC+ Studentware 11/26/89 14 cases plotted. Regression statistics of G_WON on TBA:
Correlation .60025 R Squared .36030 S.E. of Est 7.34103 Sig. .0232
Intercept(S.E.) -55.55854(52.53619) Slope(S.E.) 522.36729(200.92770)

This procedure was completed at 21:35:06 finish
[Next command's output on page 1

include 'plot1.dat'.

[* Test: Using PLOT to display data associated with a correlation study (Pearson's product-moment coefficient of correlation)



Author: Thomas W. MacFarland, Ed.D.

Source: McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

Software: SPSS/PC+ Studentware

* * * *

*

ř*

* * [* Scenario: Bared on data provided in Table 1, determine if there is a correlation (alpha = .05) between number of games won (baseball) and team batting average.

(American League teams from the 1986 season will serve as the example for this exercise).

Plot the association.

Table 1
Summary Data

| Team | Number of Games
Won | Team Batting
Average | |
|-------------|------------------------|-------------------------|--|
| Cleveland | 84 | .284 | |
| New York | 90 | .271 | |
| Boston | 95 | .271 | |
| Toronto | 86 | .269 | |
| Texas | 87 | .267 | |
| Detroit | 87 | .263 | |
| Minnesota | 71 | .261 | |
| Baltimore | 73 | .258 | |
| California | 92 | .255 | |
| Milwaukee | 77 | .255 | |
| Seattle | 67 | .253 | |
| Kansas City | 76 | .252 | |



```
Oakland
                                             76
                                                               .252
                Chicago
                                             72
                                                               .247
    Ho:
                There is no association between number of games won
                and team batting average (alpha = .05).
    Note.
                Use (a) to signify an alphabetical string when key-
                ing baseball teams.
    Answer:
                Answer(s) can be found in plot1.lis.
                                                         Briefly,
                Computed r = .600, a generally moderate positive
                association.
                  У
                                        Representation of a
                                        positive correlation
                                    X
                Be sure to rename spss.lis to plot1.lis.
DATA LIST /
      Team
                01-20 (a)
      G Won
                22-23
      ΤBA
                25-28.
VARIABLE LABELS
                "American League, 1986 Season"
"Number of Games Won"
      Team
      G Won
      TBA
                "Team Batting Average".
BEGIN DATA.
[Cleveland
                       84 .284
[New_York
                       90 .271
Boston
                       95 .271
Toronto
                       86 .269
Texas
                       87 .267
ÎDetroit
                       87 .263
Minnesota
                       71 .261
[Baltimore
                       73 .258
California
                       92 .255
[Milwaukee
                       77
                          .255
Seattle
                          .253
                       67
[Kansas City
                       76 .252
[Oakland
                       76 .252
[Chicago
                       72 .247
```



73

END DATA.
PLOT HSIZE = 36 / VSIZE = 14 / FORMAT = REGRESSION / PLOT = G_Won with TBA.
[Next command's output on page 5
finish



Test:

Using HISTOGRAM to display data associated with a correlation study (Pearson's product-moment coefficient of correlation)

Author:

Thomas W. MacFarland, Ed.D.

Source:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine if there is a correlation (alpha = .05) between number of games won (baseball) and team batting average. (American League teams from the 1986 season will serve as the example for this exercise).

Plot a histogram of number of games won (G_Won).

Table 1
Summary Data

| Team | Number of (
Won | Games Team Batting
Average |
|------------|--------------------|-------------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | . 255 |
| Milwaukee | 77 | .255 |
| | | |



| Seattle | 67 | .253 |
|-------------|----|------|
| Kansas City | 76 | .252 |
| Oakland | 76 | .252 |
| Chicago | 72 | .247 |

Ho:

* * *

*

There is no association between number of games won and team batting average (alpha = .05).

Note.

Use (a) to signify an alphabetical string when keying baseball teams.

Answer:

Answer(s) can be found in plot2.lis. Briefly, a histogram of the data offers evidence of a "quasi-bell shaped curve." Remember, with low n it is difficult to obtain representation of a bell shaped curve.

The histogram of a bell shaped curve would appear as:

```
X
XX
XXXX
XXXXXX
XXXXXXX
XXXXXXXXX
XXXXXXXXXXX
XXXXXXXXXXXX
XXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXX
XXXXXXXXXXXX
XXXXXXXXXXX
XXXXXXXXX
XXXXXXX
XXXXXX
XXXXX
XX
X
```

Be sure to rename spss.lis to plot2.lis.

DATA LIST /

Team 01-20 (a) G_Won 22-23 TBA 25-28.



11/26/89

```
VARIABLE LABELS
               "American League, 1986 Season"
     Team
               "Number of Games Won"
     G Won
               "Team Batting Average".
     TBA
BEGIN DATA.
Cleveland
                      84 .284
New York
                      90 .271
                      95 .271
Boston
                      86 .269
Toronto
                      87 .267
Texas
                      87 .263
Detroit
                      71 .261
Minnesota
                      73 .258
Baltimore
California
                      92 .255
                      77 .255
Milwaukee
                      67 .253
Seattle
                      76 .252
Kansas City
                      76 .252
Oakland
                      72 .247
Chicago
END DATA.
                             SPSS/PC+ Studentware
include 'plot2.dat'.
   Test:
               Using HISTOGRAM to display data associated with
               a correlation study (Pearson's product-moment
*
               coefficient of correlation)
   Author:
               Thomas W. MacFarland, Ed.D.
               McClave, James T., and Frank H. Dietrich, II.
   Source:
                    STATISTICS, 4th edition. San Francisco,
                    California: Dellen Publishing Company, 1988.
                    ISBN 0-02-379260-4 Page 719
   Software:
               SPSS/PC+ Studentware
   Scenario:
               Based on data provided in Table 1, determine if
               there is a correlation (alpha = .05) between number
               of games won (baseball) and team batting average. (American League teams from the 1986 season will
               serve as the example for this exercise).
               Plot a histogram of number of games won (G_Won).
                                     Table 1
                                   Summary Data
```



| Team | Number of Game
Won | es Team Batting
Average |
|---------------------------------------|-----------------------|----------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |
| Kansas City | 76 | .252 |
| Oakland | 76 | .252 |
| Chicago | 72 | .247 |
| · · · · · · · · · · · · · · · · · · · | | |

Ho:

There is no association between number of games won and team batting average (alpha = .05).

Note.

Use (a) to signify an alphabetical string when keying baseball teams.

Answer:

Answer(s) can be found in plot2.lis. Briefly, a histogram of the data offers evidence of a "quasi-bell shaped curve." Remember, with low n it is difficult to obtain representation of a bell shaped curve.

The histogram of a bell shaped curve would appear as:

X XX XXXX XXXXX



```
XXXXXXX
                XXXXXXXXX
                XXXXXXXXXXX
                XXXXXXXXXXXXX
                XXXXXXXXXXXXXX
                XXXXXXXXXXXXXXXXX
                XXXXXXXXXXXXXX
*
                XXXXXXXXXXXXX
*
                XXXXXXXXXXX
*
                XXXXXXXXX
*
                XXXXXXX
*
                XXXXXXX
¥
                XXXXX
                XX
*
                X
*
               Be sure to rename spss.lis to plot2.lis.
DATA LIST /
     Team
               01-20 (a)
     G Won
               22-23
     TBA
               25-28.
VARIABLE LABELS
               "American League, 1986 Season"
     Team
     G Won
               "Number of Games Won"
     TBA
               "Team Batting Average".
BEGIN DATA.
END DATA.
     14 cases are written to the compressed active file.
This procedure was completed at 22:08:28
FREQUENCIES VARIABLES = G Won / HISTOGRAM
MINIMUM (50)
MAXIMUM (100)
INCREMENT (5).
**** Memory allows a total of 7119 Values, accumulated across all Variables. There also may be up to 890 Value Labels for each Variable.
Page
                             SPSS/PC+ Studentware
                                                                              11/26/89
G WON
           Number of Games Won
                                                             Valid
                                                                        Cum
  Value Label
                              Value Frequency Percent Percent
                                                               7.1
                                                                         7.1
                                  67
                                                      7.1
                                                      7.1
7.1
                                  71
                                              1
                                                               7.1
                                                                        14.3
                                  72
                                                               7.1
                                                                        21.4
```

Έ3



79

```
73
                                   7.1
                                             28.6
                         7.1
                                             42.9
   76
                        14.3
                                  14.3
                                             50.0
   77
                1
                         7.1
                                    7.1
                                   7.1
                                             57.1
   84
                1
                         7.1
                                   7.1
                                             64.3
                1
   86
                         7.1
                                  14.3
                2
                                             78.6
   87
                        14.3
                1
                                             85.7
                                   7.1
   90
                         7.1
                                   7.1
                                             92.9
   92
                1
                         7.1
                                   7.1
                                            100.0
   95
TOTAL
                      100.0
                                 100.0
```

Page 3 SPSS/PC+ Studentware 11/26/89

```
G WON
           Number of Games Won
    Count
             Midpoint
         0
                 52.50
         0
                 57.50
         0
                 62.50
         1
                 67.50
         3
                 72.50
         3
                 77.50
                 82.50
         3
                 87.50
         2
                 92.50
                 97.50
                                      ..+...I....+...I....+...I....I....+...I
                       0
                                              2
                                                         3
                                  Histogram Frequency
```

Valid Cases 14 Missing Cases 0

This procedure was completed at 22:14:50

Page 4 SPSS/PC+ Studentware 11/26/89 finish

[Next command's output on page 1

include 'plot2.dat'.

Test:

Using HISTOGRAM to display data associated with

a correlation study (Pearson's product-moment

coefficient of correlation)

Author: Thomas W. MacFarland, Ed.D.

Source: McClave, James T., and Frank H. Dietrich, II.

STATISTICS, 4th edition. San Francisco,

California: Dellen Publishing Company, 1988.

ISBN 0-02-379260-4 Page 719

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine if



****** ***** there is a correlation (alpha = .05) between number of games won (baseball) and team batting average. (American League teams from the 1986 season will serve as the example for this exercise).

Plot a histogram of number of games won (G_Won).

Table 1
Summary Data

| Team | Number of Games
Won | Team Batting
Average |
|-------------|------------------------|-------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |
| Kansas City | 76 | .252 |
| Oakland | 76 | .252 |
| Chicago | 72 | .247 |

Ho:

There is no association between number of games won and team batting average (alpha = .05).

Note.

Use (a) to signify an alphabetical string when key-



```
ing baseball teams.
   Answer:
              Answer(s) can be found in plot2.lis.
                                                      Briefly,
              a histogram of the data offers evidence of a
              "quasi-bell shaped curve." Remember, with low
              n it is difficult to obtain representation of
              a bell shaped curve.
              The histogram of a bell shaped curve would
              appear as:
               X
               XX
               XXXX
               XXXXXX
               XXXXXXXX
               XXXXXXXXX
               XXXXXXXXXXX
               XXXXXXXXXXXXX
               XXXXXXXXXXXXXX
               XXXXXXXXXXXXXXXX
               XXXXXXXXXXXXXXX
               XXXXXXXXXXXX
               XXXXXXXXXXX
               XXXXXXXXX
               XXXXXXX
               XXXXXXX
               XXXXX
               XX
               X
              Be sure to rename spss.lis to plot2.lis.
DATA LIST /
     Team
              01-20 (a)
     G Won
              22-23
     TBA
              25-28.
VARIABLE LABELS
              "American League, 1986 Season"
"Number of Games Won"
     Team
     G Won
     TBA
               "Team Batting Average".
BEGIN DATA.
Cleveland
                      84 .284
New York
                      90 .271
Boston
                      95 .271
Toronto
                      86 .269
Texas
                      87 .267
```

87 .263

71 .261

73 .258



Detroit Minnesota

Baltimore

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*

| [California | 92 .255 |
|----------------------|---------------------------|
| [Milwaukee | 77 .255 |
| [Seattle | 67 .2 53 |
| [Kansas City | 76 .252 |
| [Oakland | 76 .252 |
| [Chicago | 72 .247 |
| [END DATA. | |
| | $S = G_{won} / HISTOGRAM$ |
| MINIMUM (50) | |
| MAXIMUM (100) | |
| INCREMENT (5). | |
| [Next command's outp | ut on page 4 |
| finish | |



Simple linear regression Test:

Thomas W. MacFarland, Ed.D. Author:

McClave, James T., and Frank H. Dietrich, II. STATISTICS, 4th edition. San Francisco, California: Dellen Publishing Company, 1988. ISBN 0-02-379260-4 Page 694 Source:

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, develop a model describing the relationship between y (G Won) and x (TBA). (American League teams from the 1986

season will serve as the example for this exercise).

Table 1 Summary Data

| Team | Number of Game
Won | es Team Batting
Average |
|-------------|-----------------------|----------------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |
| Kansas City | 76 | .252 |



```
.252
                                            76
               Oakland
                                            72
                                                             .247
               Chicago
               There is no association between number of games won
   Ho:
               and team batting average (alpha = .05).
               Answer(s) can be found in regress.lis. Briefly,
   Answer:
               y = -55.56 + 522.37 x
               Be sure to rename spss.lis to regress.lis.
               Use (a) to signify an alphabetical string when key-
   Note:
               ing baseball teams.
DATA LIST /
     Team
               01-20 (a)
               22-23
     G Won
     TBA
               25-28.
VARIABLE LAPELS
     Team
               "American League, 1986 Season"
               "Number of Games Won"
     G Won
     TBA
               "Team Batting Average".
BEGIN DATA.
Cleveland
                      84 .284
New_York
                      90 .271
Boston
                      95 .271
Toronto
                      86 .269
                      87 .267
Texas
                      87 .263
Detroit
Minr.esota
                      71 .261
                      73 .258
Baltimore
Cali.fornia
                      92 .255
                      77 .255
67 .253
76 .252
Milwaukee
Seattle
Kansas_City
Oakland
                      76 .252
Chicago
                       72 .247
END DATA.
                                                                             11/27/89
                             SPSS/PC+ Studentware
include 'regress.dat'.
               Simple linear regression
   Test:
               Thomas W. MacFarland, Ed.D.
   Author:
               McClave, James T., and Frank H. Dietrich, II.
   Source:
```

STATISTICS, 4th edition. San Francisco,



California: Dellen Publishing Company, 1988. ISBN 0-02-379260-4 Page 694

Software: SPSS/PC+ Studentware

Based on data provided in Table 1, develop a model describing the relationship between y (G_Won) and x (TBA). (American League teams from the 1986 season will serve as the example for this exercise). Scenario:

Table 1 Summary Data

| Team | Number of Games
Won | Team Batting Average |
|-------------|------------------------|----------------------|
| Cleveland | 84 | .284 |
| New York | 90 | .271 |
| Boston | 95 | .271 |
| Toronto | 86 | .269 |
| Texas | 87 | .267 |
| Detroit | 87 | .263 |
| Minnesota | 71 | .261 |
| Baltimore | 73 | .258 |
| California | 92 | .255 |
| Milwaukee | 77 | .255 |
| Seattle | 67 | .253 |
| Kansas City | 76 | .252 |
| Oakland | 76 | .252 |
| Chicago | 72 | .247 |

There is no association between number of games won Ho:



```
and team batting average (alpha = .05).
              Answer(s) can be found in regress.lis. Briefly,
   Answer:
              y = -55.56 + 522.37 x
              Be sure to rename spss.lis to regress.lis.
   Note:
              Use (a) to signify an alphabetical string when key-
              ing baseball teams.
DATA LIST /
     Team
              01-20 (a)
     G Won
              22-23
     TRA
              25-28.
VARIABLE LABELS
              "American League, 1986 Season"
"Number of Games Won"
     Team
     G Won
     TEA
              "Team Batting Average".
BEGIN DATA.
END DATA.
     14 cases are written to the compressed active file.
This procedure was completed at 2:25:59
REGRESSION VARIABLES = G_Won TBA / DEPENDENT = G_Won / METHOD = ENTER.
Page
                            SPS5/PC+ Studentware
                                                                          11/27/89
                   MULTIPLE REGRESSION
Listwise Deletion of Missing Data
Equation Number 1 Dependent Variable.. G WON
                                                      Number of Games Won
Beginning Block Number 1. Method:
                                      Enter
Page
       3
                            SPSS/PC+ Studentware
                                                                          11/27/89
                    MULTIPLE
                                      REGRESSION
Equation Number 1
                      Dependent Variable..
                                                      Number of Games Won
                                             G WON
Variable(s) Entered on Step Number
                    Team Batting Average
Multiple R
                     460025
```



```
.36030
R Square
Adjusted R Square
                       .30699
Standard Error
                      7.34103
Analysis of Variance
                                                    Mean Square
                      DF
                               Sum of Squares
                                                     364.23925
                                    364.23925
Regression
                      1
                                                        53.89078
Residual
                      12
                                    646.68932
                          Signif F = .0232
           6.75884
F =
                                                                              11/27/89
                             SPSS/PC+ Studentware
Page
                     MULTIPLE
                                        REGRESSION
Equation Number 1 Dependent Variable.. G_WON Number of Games Won
          ------ Variables in the Equation -------
                                                           T Sig T
                                              Beta
                                  SE B
Variable
                                                        2.600 .0232
                             200.92771
                                            .60025
               522.36729
TBA
                            52.53619
                                                       -1.058 .3111
               -55.55854
(Constant)
                         All requested variables entered.
End Block Number
                     1
This procedure was completed at 2:29:10
finish
[Next command's output on page
include 'regress.dat'.
                 Simple linear regression
    Test:
                 Thomas W. MacFarland, Ed.D.
    Author:
                 McClave, James T., and Frank H. Dietrich, II.
STATISTICS, 4th edition. San Francisco,
California: Dellen Publishing Company, 1988.
    Source:
                      ISBN 0-02-379260-4 Page 694
 *******
[[[
                 SPSS/PC+ Studentware
     Software:
                 Based on data provided in Table 1, develop a model
     Scenario:
                 describing the relationship between y (G_Won) and x (TBA). (American League teams from the 1986
                 season will serve as the example for this exercise).
                                       Table 1
```

Summary Data



| Team | Number of G
Won | ames | Team Batting
Average |
|------------------------------------|-----------------------------------|----------|-------------------------|
| Cleveland | 84 | | .284 |
| New York | 90 | | .271 |
| Boston | 95 | | .271 |
| Toronto | 86 | | .269 |
| Texas | 87 | | .267 |
| Detroit | 87 | | .263 |
| Minnesota | 71 | | .261 |
| Baltimore | 73 | | .258 |
| California | 92 | | . 255 |
| Milwaukee | 77 | | .255 |
| Seattle | 67 | | .253 |
| Kansas City | 76 | | .252 |
| Oakland | 76 | | .252 |
| Chicago | 72 | | .247 |
| There is no associand team batting | ciation between
average (alpha | n number | r of games wor
). |
| Answer(s) can be | found in regre | ess.lis | . Briefly, |
| y = -55.56 + 522 | .37 x | | |
| Be sure to rename | sp.s.lis to | regress | .lis. |
| Use (a) to signifing baseball team | fy an alphabet:
ms. | ical st | ring when key |
| | | | |



Ho:

Answer:

Note:

DATA LIST / Team

```
G_Won
TBA
                     22-23
                     25-28.
[VARIABLE LABELS
                     "American League, 1986 Season"
"Number of Games Won"
        Team
        G Won
                     "Team Batting Average".
        TBA
BEGIN DATA.
Cleveland
                               84 .284
[New_York
[Boston
                               90 .271
                               95 .271
Toronto
                               86 .269
Texas
                               87 .267
                               87 .263
71 .261
Detroit
Minnesota
[Baltimore
[California
                               73 .258
                               92 .255
77 .255
67 .253
76 .252
Milwaukee
[Seattle
[Kansas_City
[Oakland
[Chicago
                               76 .252
                               72 .247
[END DĂTA.
REGRESSION VARIABLES = G_Won TBA / DEPENDENT = G_Won / METHOD = ENTER.
[Next command's output on page 5
finish
```



Test:

Using SELECT IF to calculate descriptive statistics

for parts of a data set

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

By using SELECT IF, do not include Test #1 in the

calculations.

Table 1
Summary Data

| Test # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | ა91 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | 085 | 094 |

Answer:

*

Answer(s) can be found in selectif.lis. Briefly,

Mean for Tom (Test #2 to Test #5) = 84.00

Be sure to rename spss.lis to selectif.lis.

DATA LIST /

Test_# 01
Tom 03-05
Bob 07-09
Roy 11-13
Sue 15-17
Bea 19-21.

VARIABLE LABELS



Test_# "Test Number (of five)"
Tom "Thomas R. O'Callish"
Bob "Robert E. Lee, IV"
Roy "Leroy G. Anglesh"
Sue "Susan V. Douglas"
Bea "Beatrice H. Malcolm".

SELECT IF (Test_# > 1).

BEGIN DATA.

1 089 091 081 081 083

2 091 081 071 089 100

3 091 065 045 081 092

4 082 071 062 079 081

5 072 067 091 085 094 END DATA.

include 'selectif.dat'.

SPSS/PC+ Studentware

11/27/89

clude 'selectif.dat'. Test: Using SEL

Using SELECT IF to calculate descriptive statistics

for parts of a data set

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

*

* * *

* * * * * * *

Based on data provided in Table 1, determine the

mean for subject Tom.

By using SELECT IF, do not include Test #1 in the

calculations.

Table 1
Summary Data

| Test # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| ı | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |



```
091
                                                         085
                                                                   094
                 5
                           072
                                     067
               Answer(s) can be found in selectif.lis. Briefly,
   Answer:
               Mean for Tom (Test #2 to Test #5) = 84.00
               Be sure to rename spss.lis to selectif.lis.
DATA LIST /
     Test_#
                   01
                03 - 05
     Tom
     Bob
                07-09
                11-13
     Roy
                15-17
     Sue
     Bea
                19-21.
VARIABLE LABELS
                "Test Number (of five)"
"Thomas R. O'Callish"
"Robert E. Lee, IV"
     Test_#
     Tom
     Bob
                "Leroy G. Anglesh"
"Susan V. Douglas"
     Roy
     Sue
     Bea
                "Beatrice H. Malcolm".
SELECT IF (Test # > 1).
BEGIN DATA.
END DATA.
      4 cases are written to the compressed active file.
This procedure was completed at 0:42:36
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.
***** Memory allows a total of 7119 Values, accumulated across all Variables.
      There also may be up to
                                   890 Value Labels for each Variable.
                             SPSS/PC+ Studentware
Page
       2
                                                                              11/27/89
           Thomas R. O'Callish
TOM
                                                             Valid
                                                                        Cum
  Value Label
                                      Frequency Percent
                              Value
                                                            Percent
                                                                      Percent
                                  72
                                                     25.0
                                                              25.0
                                                                        25.0
                                  82
                                                     25.0
                                                              25.0
                                                                        50.0
                                                     50.0
                                                              50.0
                                                                       100.0
                                  91
                                              2
```

TOTAL



Mean

84.000

100.0

100.0

11/27/89

Valid Cases 4 Missing Cases 0

This procedure was completed at 0:43:49

finish [Next command's output on page 1]

include 'selectif.dat'.

Page

Test:

Using SELECT IF to calculate descriptive statistics

SPSS/PC+ Studentware

for parts of a data set

Author: Thoma W. MacFarland, Ed.D.

Source: Personal notes

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine the

mean for subject Tom.

By using SELECT IF, do not include Test #1 in the calculations.

Table 1
Summary Data

| Test # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | 085 | 094 |

Answer: Answer(s) can be found in selectif.lis. Briefly,

Mean for Tom (Test #2 to Test #5) = 84.00

Be sure to rename spss.lis to selectif.lis.



```
DATA LIST /
       Test_#
                     01
       Tom
                  03-05
       Bob
                  07-09
       Roy
                 11-13
       Sue
                 15-17
       Bea
                 19-21.
[VARIABLE LABELS
                 "Test Number (of five)"
       Test_#
      Tom
                 "Thomas R. O'Callish"
       Bob
                 "Robert E. Lee, IV"
                 "Leroy G. Anglesh"
"Susan V. Douglas"
      Roy
      Sue
                 "Beatrice H. Malcolm".
      Bea
SELECT IF (Test_# > 1).
[BEGIN DATA.
[1 089 091 081 081 083
[2 091 081 071 089 100
[3 091 065 045 081 092
[4 082 071 062 079 081
15 072 067 091 085 094
[END DATA.
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.
[Next command's output on page 3
finish
```



Test:

Using COMPUTE to calculate descriptive statistics that will be different than the original data set

Author:

×

*

*

*

*

*

*

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

By using COMPUTE, each datum for Tom will be

increased by a value of "10."

Table 1
Summary Data

| Test # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | 085 | 094 |

Answer:

Answer(s) can be found in compute.lis. Briefly,

Mean for Tom = 95.00

Be sure to rename spss.lis to compute.lis.

DATA LIST /

*

Test_# 01
Tom 03-05
Bob 07-09
Roy 11-13
Sue 15-17
Bea 19-21.

VARIABLE LABELS



"Test Number (of five)"
"Thomas R. O'Callish" Test_# Tom "Robert E. Lee, IV" Bob "Leroy G. Anglesh"
"Susan V. Douglas" Roy Sue Bea "Beatrice H. Malcolm".

COMPUTE Tom = Tom + 10.

BEGIN DATA.

1 089 091 081 081 083 2 091 081 071 089 100 3 091 065 045 081 092 4 082 071 062 079 081 5 072 067 091 085 094 END DATA.

SPSS/PC+ Studentware

11/27/89

include 'compute.dat'.

Test: Using COMPUTE to calculate descriptive statistics

that will be different than the original data set

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

By using COMPUTE, each datum for Tom will be

increased by a value of "10."

Table 1 Summary Data

| | | | | | |
|--------|-----|-----|-----|-----|-------------|
| Test # | Tom | Bob | Roy | Sue | Bea |
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |



```
5
                            072
                                      067
                                                091
                                                          085
                                                                    094
   Answer:
               Answer(s) can be found in compute.lis. Briefly,
               Mean for Tom = 95.00
*
*
               Be sure to rename spss.lis to compute.lis.
DATA LIST /
     Test #
                   01
     Tom
                03-05
     Bob
                07-09
     Roy
                11-13
     Sue
                15-17
     Bea
                19-21.
VARIABLE LABELS
                "Test Number (of five)"
"Thomas R. O'Callish"
"Robert E. Lee, IV"
     Test #
     Tom
     Bob
                "Leroy G. Anglesh"
"Susan V. Douglas"
     Roy
     Sue
     Bea
                "Beatrice H. Malcolm".
COMPUTE Tom = Tom + 10.
BEGIN DATA.
END DATA.
      5 cases are written to the compressed active file.
This procedure was completed at
                                   0:55:40
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.
**** Memory allows a total of 7119 Values, accumulated across all Variables.
      There also may be up to
                                   890 Value Labels for each Variable.
Page
       2
                             SPSS/PC+ Studentware
                                                                              11/27/89
TOM
          Thomas R. O'Callish
                                                             Valid
                                                                        Cum
 Value Label
                              Value
                                      Frequency
                                                  Percent
                                                            Percent
                                                                      Percent
```

82

92

99

101

TOTAL



1

1

1

2

5

20.0

20.0

20.0

40.0

100.0

20.0

20.0

20.0

40.0

100.0

20.0

40.0

60.0

100.0

Mean

95.000

Valid Cases

5 Missing Cases

This procedure was completed at 0:57:13

Page

SPSS/PC+ Studentware

11/27/89

finish

[Next command's output on page include 'compute.dat'.

Test:

Using COMPUTE to calculate descriptive statistics that will be different than the original data set

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

By using COMPUTE, each datum for Tom will be

increased by a value of "10."

Table 1 Summary Data

| | | _ | | | |
|--------|-----|-----|-----|-----|-----|
| Test # | Tom | Bob | Roy | Sue | Bea |
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | C85 | 094 |

Answer:

Answer(s) can be found in compute.lis. Briefly,

Mean for Tom = 95.00



```
[*
                 Be sure to rename spss.lis to compute.lis.
DATA LIST /
Test_#
                      01
      Tom
                  03 - 05
                  07-09
      Bob
                  11-13
      Roy
      Sue
                  15-17
      Bea
                  19-21.
[VARIABLE LABELS
                 "Test Number (of five)"
      Test_#
      Tom
                  "Thomas R. O'Callish"
      Bob
                  "Robert E. Lee, IV"
                  "Leroy G. Anglesh"
"Susan V. Douglas"
      Roy
      Sue
      Bea
                  "Beatrice H. Malcolm".
[COMPUTE Tom = Tom + 10.
[BEGIN DATA.
[1 089 091 081 081 083
|[2 091 081 071 089 100
[3 091 065 045 081 092
[4 082 071 062 079 081
5 072 067 091 085 094
[END DATA.
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.
[Next command's output on page
finish
```



Test: Using IF to calculate descriptive statistics that

will be different than the original data set

Author: Thomas W. MacFarland, Ed.D.

Source: Personal notes

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine the

mean for subject Tom.

By using IF, the overall mean for Tom will be

different than originally suggested.

Table 1
Summary Data

| | - | | | | |
|--------|-----|-----|-----|-----|-----|
| Test # | Tom | Bob | Roy | Sue | Bea |
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | 085 | 094 |
| | | | | | |

Answer:

Answer(s) can be found in if.lis. Briefly,

Mean for Tom = 87.20

Be sure to rename spss.lis to if.lis.

DATA LIST /

Test_# 01
Tom 03-05
Bob 07-09
Roy 11-13
Sue 15-17
Bea 19-21.

VARIABLE LABELS



101

Test_# "Test Number (of five)"
Tom "Thomas R. O'Callish"
Pob "Robert E. Lee, IV"
Roy "Leroy G. Anglesh"
Sue "Susan V. Douglas"
Bea "Beatrice H. Malcolm".

IF (Test # = 1) Tom = 100.

BEGIN DATA.

089 091 081 081 083

091 081 071 089 100

091 065 045 081 092

082 071 062 079 081

072 067 091 085 094

END DATA.

SPSS/PC+ Studentware

11/27/89

include 'if.dat'.

Test: Using IF to calculate descriptive statistics that

will be different than the original data set

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

By using IF, the overall mean for Tom will be

different than originally suggested.

Table 1
Summary Data

| Yest # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |

094

085

102

```
Answer(s) can be found in if.lis.
   Answer:
                                                   Briefly,
              Mean for Tom = 87.20
               Be sure to rename spss.lis to if.lis.
DATA LIST /
Test_#
                   01
     Tom
                03-05
     Bob
                07-09
                11-13
     Roy
     Sue
                15-17
     Bea
                19-21.
VARIABLE LABELS
     Test_#
               "Test Number (of five)"
     Tom
                "Thomas R. O'Callish"
     Bob
                "Robert E. Lee, IV"
               "Leroy G. Anglesh"
"Susan V. Douglas"
     Roy
     Sue
                "Beatrice H. Malcolm".
     Bea
IF (Test_{\#} = 1) Tom = 100.
BEGIN DATA.
END DATA.
      5 cases are written to the compressed active file.
This procedure was completed at
                                   1:06:57
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.
**** Memory allows a total of 7119 Values, accumulated across all Variables.
      There also may be up to 890 Value Labels for each Variable.
Page
       2
                            SPSS/PC+ Studentware
                                                                            11/27/89
TOM
          Thomas R. O'Callish
                                                           Valid
                                                                      Cum
 Value Label
                             Value Frequency Percent Percent
                                                                    Percent
                                 72
                                            1
                                                   20.0
                                                            20.0
                                                                      20.0
```

82

91

100

TOTAL

067

091

5

072

20.0

40.0

20.0

100.0

20.0

40.0

20.0

100.0

40.0

80.0

100.0

1

2

1

Mean

87.200

Valid Cases

Missing Cases 5

This procedure was completed at 1:08:48

Page

SPSS/PC+ Studentware

11/27/89

finish

[Next command's output on page include 'if.dat'.

Test:

Using IF to calculate descriptive statistics that

will be different than the original data set

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

mean for subject Tom.

By using IF, the overall mean for Tom will be

different than originally suggested.

Table 1 Summary Data

| Test # | Tom | Bob | Roy | Sue | Bea |
|--------|-----|-----|-----|-----|-----|
| 1 | 089 | 091 | 081 | 081 | 083 |
| 2 | 091 | 081 | 071 | 089 | 100 |
| 3 | 091 | 065 | 045 | 081 | 092 |
| 4 | 082 | 071 | 062 | 079 | 081 |
| 5 | 072 | 067 | 091 | 085 | 094 |
| | | | | | |

Answer:

Answer(s) can be found in if.lis. Briefly,

Mean for Tom = 87.20

```
[*
                Be sure to rename spss.lis to if.lis.
ĪDATA LIST /
       Test_#
                     01
       Tom
                  03-05
      Bob
                  07-09
      Roy
                  11-13
      Sue
                  15-17
      Bea
                  19-21.
 VARIABLE LABELS
                 "Test Number (of five)"
      Test_#
      Tom
                 "Thomas R. O'Callish"
                 "Robert E. Lee, IV"
      Bob
                 "Leroy G. Anglesh"
"Susan V. Douglas"
      Roy
      Sue
                 "Beatrice H. Malcolm".
      Bea
 [IF (Test_# = 1) Tom = 100.
[BEGIN DATA.
[1 089 091 081 081 083
[2 091 081 071 089 100
[3 091 065 045 081 092
[4 082 071 062 079 081
[5 072 067 091 085 094
[END DATA.
FREQUENCIES VARIABLES = Tom / STATISTICS = MEAN.
[Next command's output on page
Èinish
```

Test: Descriptive Statistics, Using Percentiles

Author: Thomas W. MacFarland, Ed.D.

Source: Personal notes

Software: SPSS/PC+ Studentware

Scenario: Based on data provided in Table 1, determine the

following percentiles for each student:

1. 25th percentile

2. 50th percentile

3. 75th percentile

Table 1
Summary Data

| Tom | Bob | Roy | Sue | Bea |
|-----|-----|-----|-----|-----|
| 089 | 091 | 081 | 081 | 083 |
| 091 | 081 | 071 | 089 | 100 |
| 091 | 065 | 045 | 081 | 092 |
| 082 | 071 | 062 | 079 | 081 |
| 072 | 067 | 091 | 085 | 094 |
| | | | | |

Answer: Answer(s) for each student can be found in pct.lis.

Be sure to rename spss.lis to pct.lis.

DATA LIST /

Tom 01-03 Bob 06-08 Roy 11-13 Sue 16-18 Bea 21-23.

VARIABLE LABELS

Tom "Thomas R. O'Callish"

106

Roy "Robert E. Lee, IV"
Roy "Leroy G. Anglesh"
Sue "Susan V. Douglas"
Bea "Beatrice H. Malcolm".

BEGIN DATA.

089 091 081 081 083 091 071 081 089 100 091 065 045 081 092 082 071 062 079 081 072 067 091 085 094 END DATA.

SPSS/PC+ Studentware

11/26/89

include 'pct.dat'.

Test: Descriptive Statistics, Using Percentiles

Author:

Thomas W. MacFarland, Ed.D.

Source:

Personal notes

Software:

SPSS/PC+ Studentware

Scenario:

Based on data provided in Table 1, determine the

following percentiles for each student:

1. 25th percentile

2. 50th percentile

3. 75th percentile

Table 1
Summary Data

| Tom | Bob | Roy | Sue | Bea |
|-----|-----|-----|-----|-----|
| 089 | 091 | 081 | 081 | 083 |
| 091 | 081 | 071 | 089 | 100 |
| 091 | 065 | 045 | 081 | 092 |
| 082 | 071 | 062 | 079 | 081 |
| 072 | 067 | 091 | 085 | 094 |

```
Answer(s) for each student can be found in pct.lis.
   Answer:
               Be sure to rename spss.lis to pct.lis.
DATA LIST /
                01-03
     Tom
                06-08
     Bob
     Roy
                11-13
     Sue
                16-18
     Bea
                21-23.
VARIABLE LABELS
                "Thomas R. O'Callish"
"Robert E. Lee, IV"
     Tom
     Bob
                "Leroy G. Anglesh"
"Susan V. Douglas"
     Roy
     Sue
                "Beatrice H. Malcolm".
     Bea
BEGIN DATA.
END DATA.
      5 cases are written to the compressed active file.
This procedure was completed at 22:57:51
FREQUENCIES VARIABLES = ALL / PERCENTILES = 25 50 75.
**** Memory allows a total of
                                   7119 Values, accumulated across all Variables.
      There also may be up to
                                  890 Value Labels for each Variable.
       2
Page
                             SPSS/PC+ Studentware
                                                                             11/26/89
TOM
          Thomas R. O'Callish
                                                            Valid
                                                                        Cum
 Value Label
                              Value Frequency Percent Percent
                                                                     Percent
                                 72
                                                              20.0
                                                    20.0
                                             1
                                                                       20.0
                                             1
                                 82
                                                              20.0
                                                    20.0
                                                                       40.0
                                 89
                                             1
                                                    20.0
                                                              20.0
                                                                       60.0
                                 91
                                             2
                                                    40.0
                                                              40.0
                                                                       100.0
                              TOTAL
                                             5
                                                   100.0
                                                            100.0
Percentile
              Value
                           Percentile
                                          Value
                                                      Percentile
                                                                     Value
  25.00
             77.000
                             50.00
                                         89.000
                                                        75.00
                                                                    91.000
Valid Cases
                   5
                           Missing Cases
Page
       3
                             SPSS/PC+ Studentware
                                                                             11/26/89
```

| BOB Ro | bert E. Lee | , IV | | | | | |
|-------------|--------------|----------------------------|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|----------|
| Value Labe | 1 | Value F | requency | Percent | Valid
Percent | | |
| | | 65
67
71
81
91 | 1
1
1
1 | 20.0
20.0
20.0
20.0
20.0 | 20.0
20.0
20.0
20.0
20.0 | 20.0
40.0
60.0
80.0
100.0 | |
| | | TOTAL | 5 | 100.0 | 100.0 | | |
| Percentile | Value | Percentile | Value | Perc | entile | Value | |
| 25.00 | 66.000 | 50.00 | 71.000 | 75 | .00 | 86.000 | |
| Valid Cases | 5 | Missing Cas | ses 0 | | | | |
| Page 4 | | SPSS/PC+ | Studentwa | re | | | 11/26/89 |
| ROY Le | roy G. Angl | .esh | | | | | |
| Value Labe | · J . | Value I | requency | Percent | Valid
Percent | | |
| | | 45
62
71
81
91 | 1 | 20.0
20.0
20.0 | 20.0 | 40.0
60.0
80.0 | |
| | | TOTAL | 5 | 100.0 | 100.0 | | |
| Percentile | Value | Percentile | Value | Perc | entile | Value | |
| 25.00 | 53.500 | 50.00 | 71.000 | 75 | .00 | 86.000 | |
| Valid Cases | 5 | Missing Cas | ses 0 | | | | |
| Page 5 | | S?SS/PC+ | Studentwa | | | | 11/26/89 |
| SUE Su | ısan V. Doug | glas | | | | | |
| Value Labe | el | Value 1 | Frequency | Percent | Valid
Percent | Cum
Percent | : |
| • | | 79
81
85
89 | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | 20.0
40.0
20.0
20.0 | 20.0
40.0
20.0
20.0 | 20.0
60.0
80.0
100.0 | |



| | | TOTAL | 5 | 100.0 | 100.0 | | |
|-----------------------|-------------------------|------------------------------------|------------------------|--------------------------------------|----------------------|----------------------|----------|
| Percentile | e Value | Percentile | Value | Perc | entile | Value | |
| 25.00 | 80.000 | 50.00 | 81.000 | 75 | .00 | 87.000 | |
| Valid Case | es 5 | Missing Cas | es 0 | | | | |
| Page 6 | | SPSS/PC+ | Studentwa | re | | | 11/26/89 |
| BEA | Beatrice H. | Malcolm | | | | | |
| Value La | abel | Value F | requency | Percent | Valid
Percent | | : |
| | | 81
83
92
94
100 | 1
1
1
1 | 20.0
20.0
20.0
20.0
20.0 | 20.0
20.0
20.0 | 40.0
60.0
80.0 | |
| | | TOTAL | 5 | 100.0 | 100.0 | | |
| Percentile | e Value | Percentile | Value | Perc | entile | Value | |
| 25.00 | 82.000 | 50.00 | 92.000 | 75 | .00 | 97.000 | |
| Valid Case | es 5 | Missing Cas | es 0 | | | | |
| This proce | edure was com | pleted at 23:0 | 0:51 | | | | |
| include 'r | mand's output | | | | | | 11/26/89 |
| [* Test: | _ | tive Statistic | , - | Percentii | .es | | |
| [* Author
[* | | W. MacFarland, | Ed.D. | | | | |
| * | e: Persona | | | | | | |
| * Softwa
* | • | + Studentware | | | | | |
| [* Scenai
[*
[* | rio: Based o
followi | on data provide
.ng percentiles | ed in Tabl
for each | e 1, dete
student: | ermine th | е | |
| *
* | 1. 25t | th percentile | | | | · | |
| * | 2. 50t | th percentile | | | | | |
| * | 3. 75t | th percentile | | | | | |



Table 1
Summary Data

| | | | , | |
|-----|-----|-----|-----|-----|
| Tom | Bob | Roy | Sue | Bea |
| 089 | 091 | 081 | 081 | 083 |
| 091 | 081 | 071 | 089 | 100 |
| 091 | 065 | 045 | 081 | 092 |
| 082 | 071 | 062 | 079 | 081 |
| 072 | 067 | 091 | 085 | 094 |
| | | | | |

Answer:

Answer(s) for each student can be found in pct.lis.

Be sure to rename spss.lis to pct.lis.

```
[DATA LIST /
[Tom 01-03
[Bob 06-08
[Roy 11-13
[Sue 16-18
[Bea 21-23.
```

VARIABLE LABELS

Tom "Thomas R. O'Callish"
Bob "Robert E. Lee, IV"
Roy "Leroy G. Anglesh"
Sue "Susan V. Douglas"
Bea "Beatrice H. Malcolm".

BEGIN DATA.

[072

[END DATA.

FREQUENCIES VARIABLES = ALL / PERCENTILES = 25 50 75. [Next command's output on page 7

finish



| DWIW TITSI / | |
|----------------|-------------------------|
| Test_# | 01 |
| Tom | 03-05 |
| Bob | 07-09 |
| Roy | 11-13 |
| Sue | 15-17 |
| Bea | 19-21. |
| VARIABLE LABEL | |
| Test_# | "Test Number (of five)" |
| Tom | "Thomas R. O'Callish" |
| Bob | "Robert E. Lee, IV" |
| Roy | "Leroy G. Anglesh" |
| Sue | "Susan V. Douglas" |
| Bea | "Beatrice H. Malcolm". |
| | |



| Test | # Tom | Bob | Roy | Sue | Bea |
|-------|-------|-------|-------|-------|-------|
| 1 | 89 | 91 | 81 | 81 | 83 |
| 2 | 91 | 81 | 71 | 89 | 100 |
| 3 | 91 | 65 | 45 | 81 | 92 |
| 4 | 82 | 71 | 62 | 79 | 81 |
| 5 | 72 | 67 | 91 | 85 | 94 |
| Count | 5 | 5 | 5 | 5 | 5 |
| | 85.00 | 75.00 | 70.00 | 83.00 | 90.00 |

